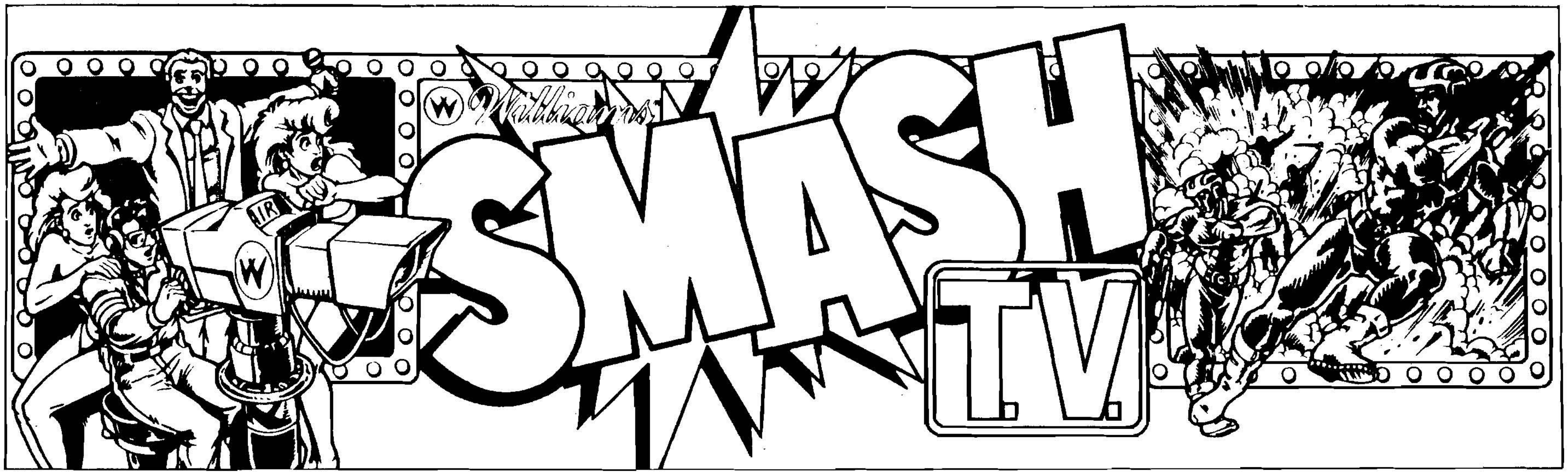


KIT

OPERATIONS MANUAL

including:

- Game Operation & Adjustment
- Game Testing & Problem Diagnosis
- Parts Information
- Reference Diagrams & Schematics

WILLIAMS ELECTRONICS GAMES, INC.
3401 N. California Avenue
Chicago, IL 60618

September 1990
16-3044-K-101

The year is 1999

Television has adapted to the more violent nature of man.

The most popular form of television remains the game show.

One show in particular has dominated the ratings. That show is SMASH TV. The most violent game show of all time.

Two lucky contestants compete for cash and prizes. Each contestant is armed with an assortment of powerful weapons and sent into a closed arena.

The action takes place in front of a studio audience and is broadcast live via satellite around the world.

Be prepared.

The future is now.

You are the next lucky contestant!

SMASH TV GAME RULES:

1. *Move with LEFT joystick to avoid enemies and gather prizes (cash and game show gifts).*

2. *Fire weapons with RIGHT joystick and collect power-up icons for increased firepower.*

3. *Advance to next game arena when enemies are gone.*

SMASH T.V. KIT

SMASH TV KIT OPTION

This kit includes 4 joysticks, two joysticks per player. The game may also be played with 1 Rotary joystick & a fire button for each player. Many existing games have these types of controls, and may easily be kitted. However, we recommend you use the 4 standard joysticks for maximum profits. If you would still like to use the rotary joystick control, instructions and wiring information are included for your convenience.

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SMASH TV

SECTION
one

Operation and Troubleshooting

Safety Notices

The following safety hints apply to all kit operators and service personnel. Specific warnings and cautions will be found throughout this manual where they apply. We recommend that you read this page, and also all of Section 1, before preparing your kit for play.

NOTICE: SALVAGED PARTS

Parts salvaged from old games are required to complete your kit. These salvaged parts must operate perfectly: otherwise, the converted game cannot perform properly or safely. Always repair circuit board malfunctions and cabinet damage before conversion is attempted.

NOTICE: POWER SUPPLY

Be sure the power supply from your old game is capable of +5V dc at 5A , -5V dc at 1A and +12V at 1A. These operating voltages are necessary for your kit. Your power supply must be FCC approved.

NOTICE: MONITOR

This kit is not intended for use with X-Y monitors. Suitable monitors have horizontally mounted CRTs and raster electronics with inputs for red, green and blue video, as well as separate horizontal and vertical Negative Sync inputs.

NOTICE: COIN MECHANISM

Be sure to clean and lubricate your old coin mechanisms. Servicing them is crucial to your game's earning potential and operation.

NOTICE: COIN METERS

Coin meters are not provided with this kit. Wiring information is provided as a convenience to the operator.

NOTICE: SERVICING, INSTALLING

Always turn your game OFF and unplug it before attempting to service or install your kit.

CAUTION

PROPERLY ATTACH ALL CONNECTORS. *Be sure that the connectors on each printed circuit board (PCB) are properly connected. If they do not slip on easily, do not force them. A reversed connector may damage your kit and void the warranty. All connectors are keyed to fit specific pins on each board.*

Conversion Procedure

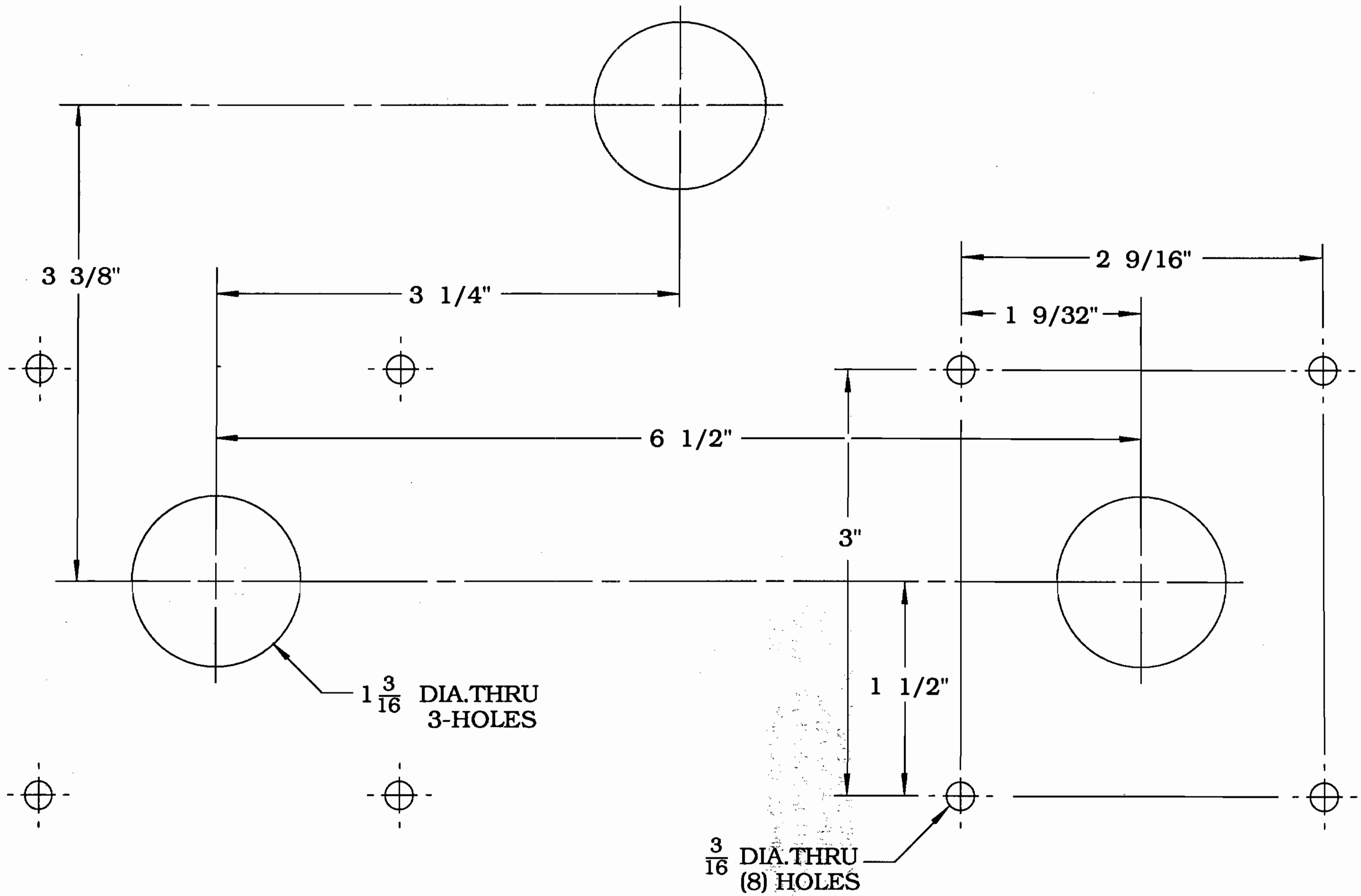
Inspection

Unpack the materials from the carton and inspect for obvious signs of damage. Use this checklist to be sure your kit is complete.

Part No.	Item	Quantity	
( ) C-9214-5	Button Assy Wht	2	
( ) C-13234-3044	CPU Assy Y-Unit	1	
( ) D-11581-3044	Audio Sound Brd Assy	1	
( ) D-13604	Sound Brd & Plate Assy	1	
( ) H-8866	Volume Control Cable	1	
( ) H-12758	Sound Board Jumper	1	
( ) H-13257	Sound Pwr/ Spker Cable	1	
( ) H-13411	JAMMA Main Harness	1	
( ) 03-8338-1	1/4 PC Spacer	7	
( ) 16-3044-k-101	Manual	1	
( ) 16-8850-289	PCB Assy Label	1	
( ) 16-8587-795	FCC Label	1	
( ) 16-8587-825	FBI Label	1	
( ) 16-8587-892-1	Williams Kit S/N Label	1	
( ) 16-8903	Game Registration Card	1	
( ) 20-9222	5/8 Palnut	2	
( ) 20-9319-1	8 Way Joystickl	4	
( ) 20-9457	Button Holder with switch	2	
( ) 31-1564-3044-K	Screened Cntrl. Panel	1	
( ) 31-1565-3044-K	Marquee-Kit	1	
( ) 31-1566-3044-K	Decal Set	2	
( ) 31-1596-3044-K	Screened CRT	2	
( ) 4106-01115-12	SMS #6 x 3/4 PL-HWH	6	(4 USED IN MOUNTING SOUND BOARD PLATE) (2 USED IN MOUNTING VOLUME CONTROL POT)
( ) 4106-01115-16	SMS #6 x 1 PL-HWH-A	7	(FOR MOUNTING CPU BOARD)
( ) 4308-01123-16B	BOLT 8 - 32 x 1 CB	16	(FOR MOUNTING JOYSTICKS)
( ) 4408-01119-00	Nut	16	
( ) 5795-10937-18	20-pin Ribbon Cable	1	
( ) 5014-12363-00	Volume Control Pot	1	

Recommended Tools and Supplies

( ) black semi-gloss paint
( ) electric drill
( ) electric screwdriver
( ) grease pencil or marker
( ) hex driver
( ) 180 grit sandpaper or electric sander
( ) pliers
( ) razor knife
( ) soldering iron and solder
( ) wire cutters
( ) black electrical tape
( ) quick-hardening wood putty



16-9154
TEMPLATE - CONTROLS
USED ON 3044-K KIT

Cabinet Modifications

1. Fill in gouges with a good quick-hardening wood putty. Sand cabinet and wipe it clean.

2. Repaint the cabinet with black semi-gloss paint (Games wood grain sides: remove the old decals and clean the glue residue from the old decal before painting). Allow paint to dry completely.

3. Pencil a line roughly at the top of the old graphic. Lightly moisten the cabinet with soapy water. Apply the decal starting at the top and working down. After the decal is in place, use a piece of the foam packaging as a squee gee and smooth the decal down, taking care to squeeze out the air bubbles. If you miss an air bubble, pop it with a razor blade or a pin and burnish it down. Allow 12 hours for the adhesive in the decals to set. Remove masking.

4. Check the SMASH TV Kit for an FCC sticker and apply it over the existing sticker on the cabinet.

   When Williams ships a game, it is in compliance with FCC regulations. Your sticker is proof. If the sticker is missing or damaged, legal repercussions to the owner or distributor of the game may result. If your game kit does not contain an FCC sticker, call Williams Electronics immediately.

5. Apply the Instructions (Card or Decals) to the CRT viewing glass.

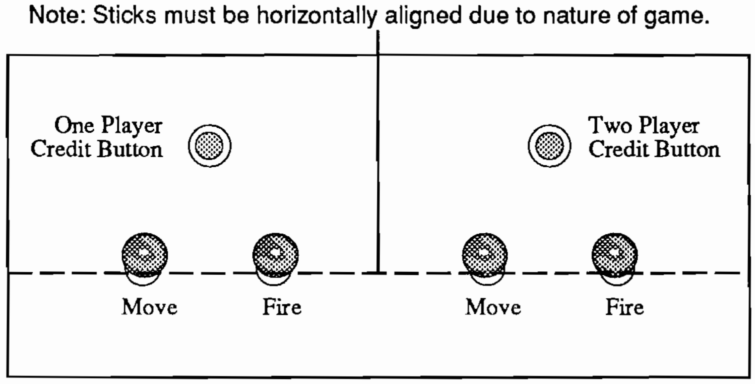
Control Panel Modifications

1. Remove the control panel buttons and joysticks and remove the old vinyl covering.

2. Place the template on the control panel and use it to help you design your control panel. You will need to use the Mounting Template twice, once for the left side and once for the right side of the control panel.

OPTIMAL CONTROL PANEL LAYOUT

Note: Sticks must be horizontally aligned due to nature of game.



3. Drill holes as needed for the joysticks and buttons. Plug previous holes with wood blocks, putty, cardboard or epoxy. File the new holes smooth.

4. Carefully remove the backing on the vinyl control panel overlay. Place the overlay on top of the control panel. Prevent air bubbles from getting under the vinyl overlay.

5. a) After the overlay is on securely , use a razor knife to cut holes for the buttons and joysticks.
   b) Position the stickers around the appropriate button locations. Refer to the Typical Control Panel Layout diagram on the previous page for suggested button and joystick locations. (NOTE: Layout Diagram Must Be Used Twice, One For Each Player.)
   c) Peel the backing from the adhesive on the clear protective overlay. Position the overlay so that it covers the stickers and press it into place. Use a razor knife to cut holes for the joystick and buttons.

6. To mount the pushbuttons and button-holder/switch to the control panel, push the threaded end of the push-button through the control panel from the top so that the threads extend through the back of the control panel. Then, take the white plastic button holder/switch and place it over the pushbutton threads so that the threads extend through the hole in the holder. The blade switch must point toward the back of the cabinet and face you. Secure into place with a palnut. Repeat for all of the pusbutton switches.

7. The joystick must be disassembled before mounting it to the control panel. Remove the 4 screws from the back of the slide assembly. Remove the slide assem bly, the PC Board, and the stop assembly. Take off the "E" ring and the white plastic spacer. Slide the knob out of the base . Mount the base to the back of the control panel. Insert the knob through the base from the front of the control panel. Replace the white plastic spacer and the "E" ring. Slip the stop assembly over the knob shaft so the the legs fit into the base (do not force). Replace the PC Board component side facing you; BE SURE THAT THE CONNECTOR FACES THE RIGHT SIDE OF THE CONTROL PANEL. Install the slide as sembly so that the holes in both slides fit over the knob shaft and replace the 4 screws.

Installing the PC Boards and Wiring into a JAMMA Game Cabinet

Note

If you choose to use your own JAMMA Cable and not the one providedin the kit, be sure to check the JAMMA Cable Connector Chart to verify that it is compatible.

Caution

Properly insulate any unused wires within the JAMMA Cable, especially the gray, gray-green and gray-yellow wires. This is a fully wired JAMMA Cable. Many of the wires will not be used for this kit. These wires have been installed so that you can use this cable for future kits.

Note

The Ribbon Cable may need to be twisted in order to connect it properly.

1. Disconnect and remove the existing video board in the JAMMA Game Cabinet.

2. Mount the SMASH TV video board inside the JAMMA Game Cabinet where the old video board was located Mount the sound board next to the video board using the stand-off and screws provided.

3. If you choose to use the JAMMA Cable provided with the kit, unsolder your old JAMMA cable from the speaker, power supply, control panel switches (which may already be disconnected) and coin door. Remove the cable from the game. If you are not going to use the JAMMA Cable provided with the kit, check the JAMMA Cable Connector Chart to be sure your cable is compatible. Leave your power supply chassis as is.

4. Connect the JAMMA Cable to J1 on the SMASH TV video board. Using the JAMMA Cable Connector Chart for reference, solder the correct JAMMA Cable wires to the speaker, power supply, control panel switches and coin door.

5. Connect the ribbon cable from J4 on the sound board to J8 on the video board. Be sure that the red line goes to the same pin on both boards. Connect the wire harness cable from J5 (speaker), and J3 (power), on the sound board to J2 (sound power speaker connector) on the video board.

6. Connect the video signal cable from JP6 on the video board to your monitor. Be sure that pin 1 on the monitor is connected to pin 1 on the video board and so on.

7. Connect the joystick harness from the video board to the joystick opto boards. The player 1 connector has red wires and is connected from JP4 on the video board to the opto board on the player 1 joystick. The player 2 connector has blue wires and is connected from JP5 on the video board to the opto board for the player 2 joystick. The power connector has 4 wires and is connected to JP8 on the video board.

8. JP3 on the video board is not used.

9. Place the FBI Warnng Label on the inside of the cabinet next to the PC boards. Be sure the label is completely visible.

Installing the PC Boards and Wiring into a NON-JAMMA Game Cabinet.

1. Disconnect and remove the existing video board in the game cabinet.

2. Mount theSMASH TV video board inside the Game Cabi net where the old video board was removed. Mount the sound board next to the video board using the stand-offs and screws provided.

3. Leaving several inches of wire, cut the wires at the coin door, control panel switches (which may already be disconnected) speaker and power supply.

4. Connect JAMMA Cable to video board at J1. Follow the JAMMA Cable Connector Chart and splice the wires of the JAMMA Cable to the existing wires for the coin door, power supply, speaker and control panel. Be sure all of the spliced wires are well insulated with black electrical tape.

5. Connect the ribbon cable from J4 on the sound board to J8 on the video board. Be sure that the red line goes to the same pin on both boards. Connect the wire harness cable from J5 (speaker), and J3 (power) on the sound board to J2 (sound power speaker connector) on the video board.

6. Connect the video signal cable from the JAMMA HAR NESS on the video board to your monitor.

7. Connect the joystick harness from the video board to the joystick opto boards.. The player 1 connector has red wires and is connected from J4 on the video board to the opto board on the player 1 joystick. The player 2 connector has blue wires and is connected from J5 on the video board to the opto board on the player 2 joystick. The power connector has 4 wires and is connected to J8 on the video board.

8. J3 on the video board, is not connected.

9. Place the FBI Warning Label on the inside of the cabinet next to the PC boards. Be sure the label is completely visible.

Note

Be sure all spliced wires are well insulated with black electrical tape.

Caution

Properly insulate any unused wires within the JAMMA Cable, especially the gray, gray-green and gray-yellow wires. This is a fully wired JAMMA Cable. Many of the wires will not be used for this kit. These wires have been installed so that you can use this cable for future kits.

Note

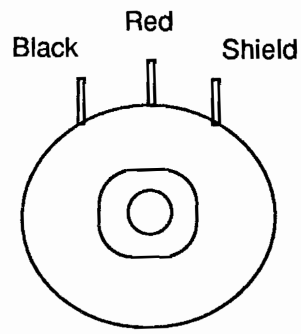
The Ribbon Cable may need to be twisted in order to connect it properly.

Installing the Volume Control

1. Mount the volume control, using screws provided, where it is easily accessible. On top of the cash box, or on the wall near sound board are two possible locations.

2. The volume control cable attaches the volume control to the sound board at connector J2. When viewed with the white plastic knob facing you, the shield wire should be soldered to the right lug, the red wire should be soldered to the middle lug, and the black wire should be soldered to the left lug. Refer to Volume Control Diagram.

Volume Control Wiring Diagram



Game Features

Starting Up

Switch on power to the game. A "rug" pattern appears on the crt screen. When the "rug" pattern ends, the screen shows CHECKING SCRATCH RAMS, and then CHECKING ROMS. The next screen shows SMASH TV REVISION LEVEL, CMOS TEST OK and the COIN SETTING. The game then moves to the attract mode. After the proper coinage has been inserted, the game exits the attract mode and enters the play mode.

SMASH TV is a one or two player game.

Player Controls

- Each Credit button allows (1 or 2) players to begin play or continue play.
- Left Joysticks enable players to move through arenas.
- Right Joysticks enable players to fire on enemies in arenas.

NOTE

SMASH TV will operate in the Test Mode, when the DIP Switch Bank #2 Switch #1 is toggled.

When an error is detected during Start-up Tests, game start-up does not progress, and an error message appears on the screen.

NOTE

SMASH TV Kit will support a Test Switch (located on the cash box cover), if available, it can be used.

Game Operation

SMASH TV is a one or two player video game with a color monitor. From the player's perspective, the game has two modes of operation: Ready-to-Play and Play. For the owner/operator, the game has an additional mode of operation called Game Diagnostics and Adjustments.

Control Switches

- The **COIN DOOR SLAM TILT SWITCH** detects any forceful vibrations against the Coin Door. This eliminates pounding for free games. This switch is optional, the game operates without it.
- The **VOLUME CONTROL** allows increasing or decreasing the volume level of the game music and speech. For greater profits, set your game's volume level at its maximum.
- The **TEST/DIAGNOSTICS SWITCH** allows you to enter into the game's Diagnostic mode. Move the Test Switch to the left, then back to the right to enter the Diagnostics Mode. To exit this mode, select EXIT TO GAME OVER from the Diagnostics main menu. This is an optional switch. Game diagnostics can also be reached through the Dip Switch Bank 2, Switch #1.
- The **SERVICE CREDIT SWITCH** is a special feature switch that allots credit without affecting the game's bookkeeping total. This switch is optional, the game operates without it.

Game Audits, Adjustments & Diagnostics

Operation

All SMASH TV Game Audits, Adjustments, and Diagnostics are options of the Main Test Menu. Each option, in turn, has its own menu, listing several choices that you may act upon as desired.

Activate the Test Mode through the Dip Switch Table (#2) or move the Test Switch (on the cashbox lid panel) from the OFF position to the ON position to activate the Smash TV Kit Diagnostics. Main Test Menu (shown below) then appears. Game adjustments, bookkeeping, and diagnostics are all accessible from this menu.

Move the left joystick up or down to cycle through the menu options. Notice that the options are highlighted in sequence. Selecting a desired option requires it to be highlighted. To activate the selected option, press any button.

The Main Test Menu lists six options.

SELECT WITH LEFT STICK
ACTIVATE WITH ANY BUTTON

DIAGNOSTIC TESTS

COIN BOOKKEEPING

GAME AUDITS

GAME ADJUSTMENT

UTILITIES

EXIT TO GAME OVER

Main Test Menu

DIAGNOSTIC TESTS

To enter the Diagnostic Tests from the Main Test Menu, move the left joystick to select (highlight) the Diagnostic Test option, and move the right joystick to activate the option.
The Diagnostic Tests Menu lists seven options.

SELECT WITH LEFT STICK
ACTIVATE WITH ANY BUTTON

SWITCH TEST
ROM BOARD TEST
CPU BOARD TEST
SOUND BOARD TEST
MONITOR PATTERNS
RUN BURN-IN TEST
RETURN TO MAIN MENU

Diagnostic Test Menu

Switch Test

The Switch Test allows the operator to test the switches on the control panel and the coin door.

Select the Switch Test by using the leftjoystick to highlight the Switch Test option; then, move the right joystick to activate it. The top of the screen shows a layout of the control panel and the bottom of the screen lists the coin door switches. Pressing a switch causes the corresponding switch location on the screen to light. Release the switch and the screen returns to normal.

Select the RETURN TO MAIN MENU option to return to the Diagnostic Test Menu.

DIP Switch Test

The DIP Switch Test allows the operator to check the position of the two 8-position DIP switches on the CPU Board. The operator can also change the setting of each position of each DIP switch during this mode.

Select the DIP Switch Test by moving the left joystick to highlight the DIP Switch Test option; then, press any button to activate the test. The upper portion of the screen displays a layout of the DIP switches and their current settings. The lower portion of the screen shows all of the possible settings for Coinage, Country, and Number of Players. OFF (0) indicates that a switch is open. ON (1) indicates that a switch is closed.

To change the setting of either DIP switch, press the switch position (SW1 - SW8) to the desired setting (ON from OFF (1 from 0), or vice versa). Check the upper portion of the screen to verify that the switch now shows the setting desired.

Press any control panel button to return to the Diagnostic Test Menu.

NOTE

The numbers preceding Coinage (543) (on DIP #1) and, on DIP #2, Country (21), and Number of Players (65) are the position numbers on the DIP that must be used to make that setting.

SMASH TV DIP SWITCH SETTINGS

NOTE: Switch positions SW3 through SW8 of Dip Switch DS1 determine the coinage of the game. To change the coinage setting, change the setting of Switch Positions SW3 - SW8 to the desired setting shown in the DS1 Chart. The game must then go through a **FULL FACTORY RESTORE** (found in the Utilities Menu) to activate the change in coinage.

DS1 (1st bank)

COUNTRY	COIN MODE	SW3 SW4 SW5 SW6 SW7 SW8
USA 1	L=1/.25 R=1/.25	OFF OFF OFF OFF OFF OFF
USA 2	L-1/2X.25 R=1/2X.25	OFF OFF OFF OFF OFF ON
USA 3	L, R=1/2X.25; 2/3X.25, 3/4X.25	OFF OFF OFF OFF ON OFF
GERMANY 1	L=1/1DM, R=6/5DM, (3)=2/2DM	OFF OFF OFF OFF ON ON
GERMANY 2	L=1/1DM, R=7/5DM, (3)=2/2DM	OFF OFF OFF ON OFF OFF
GERMANY 3	L=6/5DM, R=2/2DM, (3)=1/1DM	OFF OFF OFF ON OFF ON
FRENCH 1	L=2/5F, R=5/10F	OFF OFF OFF ON ON OFF
FRENCH 2	L=2/5F, R=4/10F	OFF OFF OFF ON ON ON
FRENCH 3	L=1/3X1F, R=2/5F, (3)=5/10F	OFF OFF ON OFF OFFOFF
SWISS 1	L=1/1F, R=6/5F	OFF OFF ON OFF OFF ON
ITALY	L, R=1/500 LIRE	OFF 0FF ON OFF ON OFF
UK 1	L=1/20P, R=3/50P	OFF OFF ON OFF ON ON
UK 2	L=2/20P, R=5/50P	OFF OFF ON ON OFF OFF
UK ELEC.	L=4/L1.00, R=2/50P, (3)=1/30P, (4)=1/3X10P	OFF OFF ON ON OFF ON
SPAIN 1	L=1/25 PESETA, R=5/100 PESETA	OFF OFF ON ON ON OFF
AUSTRALIA 1	L=1/3X.20, R=2/1.00	OFF OFF ON ON ON ON
JAPAN 1	L, R, (3)=1/100 YEN	OFF ON OFF OFF OFF OFF
JAPAN 2	L, R, (3)=2/100 YEN	OFF ON OFF OFF OFF ON
AUSTRIA 1	L=1/2X5 SCHILLING, R=3/2X10 SCHILLING	OFF ON OFF OFF 0N OFF
BELGIUM 1	L=7/50F, R=3/20F, (3)=1/2X5F	OFF ON OFF OFF ON ON
BELGIUM 2	L=3/20F, R=3/20F	OFF ON OFF ON OFF OFF
SWEDEN	L=1/3X1 KRONA, R=2/5 KRONA	OFF ON OFF ON OFF ON
NEW ZEALAND	L, R=1/3X.20	OFF ON OFF ON ON OFF
NETHERLANDS	L=1/1HFL, R=3/2.5HFL	OFF ON OFF ON ON ON
FINLAND	L=1/2X1 MARKKA, 3/5X1 MARKKA	OFF ON ON OFF OFF OFF
NORWAY	L=1/2X1 KRONE, R=3/5X1 KRONE	OFF ON ON OFF OFF ON
DENMARK	L=1/2X1 KRONE, R=3/5X1 KRONE, 7/2X5 KRONE	OFF ON ON OFF ON OFF

DS2 (2nd bank)

Switch 1	Toggle To Activate Kit Test Mode
Switch 2	Close Switch To Enable Rotary Joystick Option

NOTE

As soon as a faulty chip is detected, the CPU Test stops. The remaining chips are not tested.

CPU Board Test

The CPU Board Test (much like the Start-up Test) allows the operator to check the RAMs and ROMs.

Move any joystick to select the CPU Board Test; then, press any control panel button to activate the automatic test of the CPU Board's RAMs and ROMs. When this test is activated, a "rug'" pattern appears on the screen. The screen then changes to show the layout of the RAMs, and ROMs on the CPU. Any chip that is shown as black with a white outline is part of the CPU and should turn either red or green during the CPU Test. Any chip that is shown as gray with a white outline is not installed in the game. During the test, chips are good, if they turn green; they are faulty, if they turn red.

Press any control panel button to return to the Diagnostic Test Menu.

Sound Board Test

The Sound Test allows listening to some of the sounds that SMASH TV is capable of producing. This test also emits a tone for each fault that is detected.

Move any joystick to select the Sound Board Test; then, press any control panel button to activate the test.

Monitor Patterns

The Monitor Patterns Test provides a menu for testing the monitor.

Move the left joystick to select a test; move the right joystick to activate the test.

SELECT WITH LEFT STICK
ACTIVATE WITH RIGHT STICK

RED SCREEN
GREEN SCREEN
BLUE SCREEN
COLOR BARS
CROSSHATCH PATTERNS
BACK TO DIAGNOSTICS MENU
RETURN TO MAIN MENU

Monitor Pattern Menu

The **RED, GREEN**, and **BLUE SCREEN** tests fill the screen with either red, green or blue.
The **COLOR BARS** test fills the screen with several gradiated colors to help with red, green and, blue level adjustments. Each color should appear sharp and clear.
The **CROSSHATCH PATTERNS** test fills the screen with a grid and a series of dots. The grid and the dots should be clear. The dots should appear round.

If any of the Monitor Pattern Tests shows a need for adjustment, use the proper white knobs on the Monitor Board.

Move right joystick to return to the Monitor Patterns Menu. From this menu, select RETURN TO MAIN MENU with left joystick and activate with right joystick.

Burn-in Test

The Burn-in Test continually repeats the CPU Board Test. Move any joystick to select the Burn-in Test; then, press any button to activate the test. When the Burn-in Test detects an error, the test stops and displays an error message on the screen. The third page of the Audit Table specifies the number of Burn-in cycles successfully completed. Use this test to find intermittent CPU problems.

To exit this test, switch off the game; then, switch it on again.

COIN BOOKKEEPING

To enter the Coin Bookkeeping from the Main Test Menu, move the left joystick to select the Coin Bookkeeping option; then, move the right joystick to activate it.

The Coin Bookkeeping Table records the coinbox totals and game play counters. The left side of the table names the bookkeeping item; the right side shows the number of coins, credits, or plays for each item.

LEFT SLOT COINS	0
RIGHT SLOT COINS	0
CENTER SLOT (3) COINS	0
EXTRA SLOT (4) COINS	0
PAID CREDITS	0
TOTAL COLLECTION	0
SERVICE CREDITS	0
TOTAL PLAYS	0
PLAYS UNTIL HIGH SCORE RESET	5000

RETURN TO MAIN MENU

Coin Bookkeeping Table

To exit Coin Bookkeeping, move the left joystick to select RETURN TO MAIN MENU; then, press any button to activate it.

GAME AUDITS

To enter Game Audits from the Main Test Menu, move the left joystick to select the Game Audits option; then, press any button to activate it. To advance to the next (or return to the previous) page of the Game Audit Table, move any joystick to select either "Next Audit Page", or "Previous Audit Page"; then, press any control panel button to change the page.

The Game Audits Table records the game play statistics. The left side of the table names the Audit item; the right side shows the amount of play.

GAMES STARTED (FROM ANYWHERE)	0
GAMES CONTINUED	0
EXTRA MEN COLLECTED/EARNED	0
HOURS OF SINGLE PLAY	0
HOURS OF DUAL PLAY	0
TOTAL HOURS OF PLAY	0
AVG. "PLAYER" GAME TIME (MIN.)	0
AVG. ELAPSED TIME/PLAY	0

NEXT AUDIT PAGE
RETURN TO MAIN MENU

PAGE 1 OF AUDIT TABLE

GAMES STARTED (ALWAYS FROM WAVE 1)	0
REACHED WAVE 2	0
REACHED MUTOID MAN	0
REACHED CIRCUIT 2 WAVE 1	0
REACHED SCAR FACE	0
REACHED CIRCUIT 3 WAVE 1	0
REACHED TEMPLE WAVES	0
REACHED BOSS SNAKES	0
REACHED END OF GAME	0
LOCKUPS	0

PREVIOUS AUDIT PAGE
RETURN TO MAIN MENU

PAGE 2 OF AUDIT TABLE

To exit the Game Audit Table , move the left joystick to select RETURN TO MAIN MENU; then, press any button to activate it.

GAME ADJUSTMENTS

Move the left joystick to select the Game Adjustment option on the Main Test Menu; then, press any button to activate it.

The Game Adjustments option allows the owner/operator to change the Game Pricing and Game Difficulty.

The Game Adjustment Menu offers several choices. Each choice has its own menu. Move the left joystick to select your choice to be changed from the Game Adjustments Menu; then, press any button to activate that choice. On the next menu screen, move the left joystick to select the item you wish to modify; then, press any button to activate that item. If the activated item only provides a setting choice, move the left joystick to change the current setting to the desired value; then, press any button to lock in the desired value. Moving the joystick up increases the setting value shown on the screen. Moving the joystick down causes the value shown on the screen to decrease.

SELECT WITH LEFT STICK
MOVE RIGHT STICK TO MODIFY

STANDARD PRICING

CUSTOM PRICING

COIN COUNTER MODE (3 choices)

GAME DIFFICULTY

LIVES PER PLAY

ATTRACT-MODE SOUND

AUTO HIGH SCORE RESET

VIOLENCE LEVEL

RETURN TO MAIN MENU

Game Adjustment Menu

Standard Pricing

Standard Pricing allows the operator to choose any of the "Standard" selections for the Standard Pricing Table. Standard Pricing *cannot* be installed when either Custom or DIP Switch Pricing is in effect.

NOTE

The SMASH TV Standard Pricing Table is on page 1-19.

Press any button to return to the Game Adjustments Menu.

Custom Pricing

Custom Pricing allows the operator to install pricing other than that of the Standard Pricing Table. Custom Pricing also allows the operator to select the maximum amount of credits per game, the amount of credits required to start a game, and the amount or credits required to continue a game. Custom Pricing *cannot* be installed when DIP Switch Pricing is in effect.

Press any button to return to the Game Adjustments Menu.

Coin Counter Mode

Coin Counter Mode allows the operator to select the appropriate counter mode. The three choices are:
- Proportional Count
- One count per coin
- Two coin counter(s)
    a. right
    b. left

Game Difficulty

Game Difficulty allows the operator to select the difficulty level of the game. The range of this setting is Easiest (1) to Hardest (10).

Press any butthon to return to the Game Adjustments Menu.

Lives per Play

Lives per Play allows the operator to select the number of lives a player receives each time a game is started or continued.

Press any button to return to the Game Adjustments Menu.

SMASH TV STANDARD PRICING TABLE

NAME	SETTING Credit/Coin	LEFT CHUTE	CENTER CHUTE	RIGHT CHUTE
USA 1 USA 2 USA 3	1/25¢ 1/50¢ 1/50¢, 2/75¢, 3/$1	25¢ 25¢ 25¢		25¢ 25¢ 25¢
GERMANY 1 GERMANY 2 GERMANY 3	1/1 DM, 6/5 DM, (3) = 2/2 DM 1/1 DM, 7/5 DM, (3) = 2/2 DM 6/5 DM, 2/2 DM, (3) = 1/1 DM	1 DM 1 DM 5 DM	2 DM 2 DM 1 DM	5 DM 5 DM 2 DM
FRENCH 1 FRENCH 2 FRENCH 3	2/5 F, 5/10 F 2/5 F, 4/10 F 1/3 X 1 F, 2/5 F, (3) = 5/10 F	5 F 5 F 1 F	 1 F	10 F 10 F 5 F
SWISS 1	1/1 F, 6/5 F	1 F		5 F
ITALY	1/500 LIRE	500 LIRE		500 LIRE
UK 1 UK 2 UK ELEC.	1/20 P, 3/50 P 2/20 P, 5/50 P 4/L 1.00, 2/50 P, (3) = 1/30 P, (4) = 1/3 X 10 P	20 P 20 P L 1.00	 30 P, 10 P	50 P 50 P 50 P
SPAIN 1	1/25 PESETA, 5/100 PESETA	25 PESETA		100 PESETA
AUSTRALIA 1	1/3 X .20¢, 2/$1.00	20¢		$1.00
JAPAN 1 JAPAN 2	(3) = 1/100 YEN (3) = 2/100 YEN	100 YEN 100 YEN		100 YEN 100 YEN
AUSTRIA 1	1/2 X 5 SCHILLING, 3/2 X 10 SCHILLING	5 SCHILLING		10 SCHILLING
BELGIUM 1 BELGIUM 2	7/50 F, 3/20 F, (3) = 1/2 X 5 F 3/20 F, 3/20 F	50 F 20 F	5 F	20 F 20 F
SWEDEN	1/3 X 1 KRONA, 2/5 KRONA	1 KRONA		5 KRONA
NEW ZEALAND	1/3 X .20¢	20¢		20¢
NETHERLANDS	1/1 HFL, 3/2.5 HFL	1 HFL		2.5 HFL
FINLAND	1/2 X 1 MARKKA, 3/5 X 1 MARKKA	1 MARKKA		1 MARKKA
NORWAY	1/2 X 1 KRONE, 3/5 X 1 KRONE	1 KRONE		1 KRONE
DENMARK	1/2 X 1 KRONE, 3/5 X 1 KRONE, 7/2 X 5 KRONE	1 KRONE	5 KRONE	1 KRONE

Attract Mode Sound

Attract Mode Sounds allows the operator to determine if the game has sound during the Attract Mode.

Press any button to return to the Game Adjustments Menu.

Auto High Score Reset

Auto High Score Reset allows the operator to determine how many plays must occur before the all time high scores are automatically reset to factory settings.

Press any button to return to the Game Adjustments Menu.

Violence Level

Allows the operator to determine the Volence Level of the game.

Press any button to return to the Game Adjustments Menu.

To return to the Main Test Menu, move the left joystick to select RETURN TO MAIN MENU; then, press any button to activate.

UTILITIES

On the MainTest Menu, move the left joystick to select the Utilities option; then, press any button to activate it.

The Utilities option allows the owner/operator to clear the game's bookkeeping memory and to install a custom message.

SELECT WITH LEFT STICK
ACTIVATE WITH ANY BUTTON

CLEAR CREDITS

CLEAR COIN COUNTERS

CLEAR GAME AUDITS

RESET HIGH SCORES

DEFAULT ADJUSTMENTS

FULL FACTORY RESTORE

RETURN TO MAIN MENU

Utilities Menu

Move the left joystick to select an item from the Utilities Menu; then, press any button to activate that item. After an item has been activated, you are given the option of resetting the item or not. For example;

CLEAR CREDITS
ARE YOU SURE ?

YES
NO

Move the left joystick to choose YES or NO; then, press any button to lock in your choice and to return to the Utilities Menu.

To exit Utilities, move the left joystick to select RETURN TO MAIN MENU; then, press any button to activate it.

Troubleshooting

Problem	Possible Solution
NO PICTURE OR DISTORTED PICTURE.	Check for faulty video board or monitor. Check for disconnected video signal cable.
TURN GAME ON & NOTHING HAPPENS	Check line fuse. Check for +5V dc at pins C, D, 3, and 4 of the JAMMA Connector.
NO SOUND	Check the speaker and speaker connection to pins L and 10 on JAMMA Connector. Check volume control setting. Check for +12V dc at pins F and 6 on the JAMMA Connector. Check interboard wiring from CPU Board to Sound Board.
MOVE JOYSTICK, BUT PLAYER DOES NOT MOVE OR FIRE	Check for open wires between Joystick and CPU Board. Check for contamination on joystick switch contacts and CPU Board pins. Check for proper ground. **SEE NOTE**
PRESS **START BUTTON** AND NOTHING HAPPENS	Check for open wires between button and CPU Board. Check for contamination on CPU Board pins or button switch blade contacts. Check for proper ground.
NO CREDIT GIVEN WHEN COINS ARE INSERTED	Check DIP switch coin setting. Check for contamination on coin switch contacts. Check for an open wire between Coin Switch 1 and pin 16 on JAMMA Connector or Coin Switch 2 and pin T of JAMMA Connector.
TOO MANY CREDITS FOR NUMBER OF COINS INSERTED	Check Game Pricing setting. Check for a short between pins T & 16 on JAMMA Connector.
GAME STAYS IN THE TEST MODE.	Check that the Test Switch in the coin door and the Test Switch (Position [illegible]) on DIP Switch 2 are set to Off.

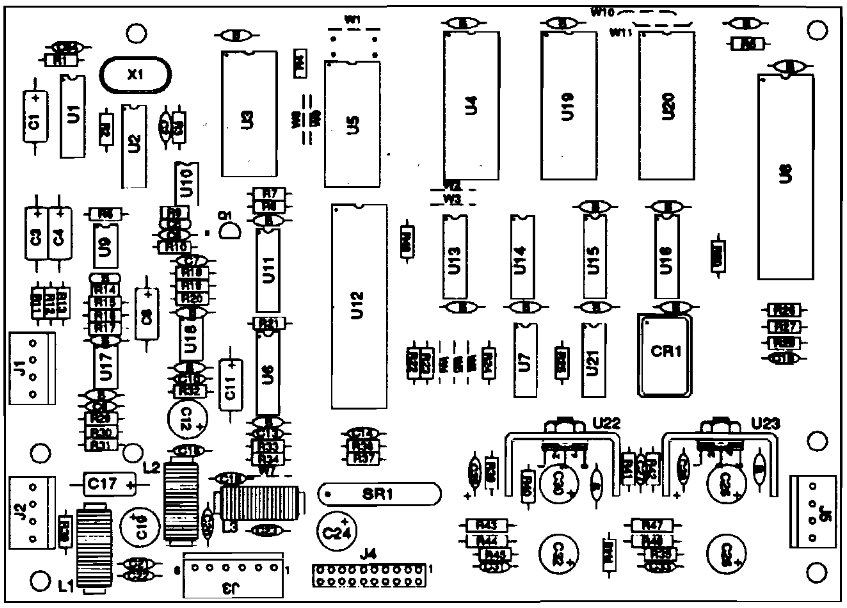
NOTE: Due to the physical playing nature of SMASH TV, joysticks should be periodically checked and adjusted as necessary.

NOTES

SMASH TV

SECTION two

Parts Information



Audio Board Assembly

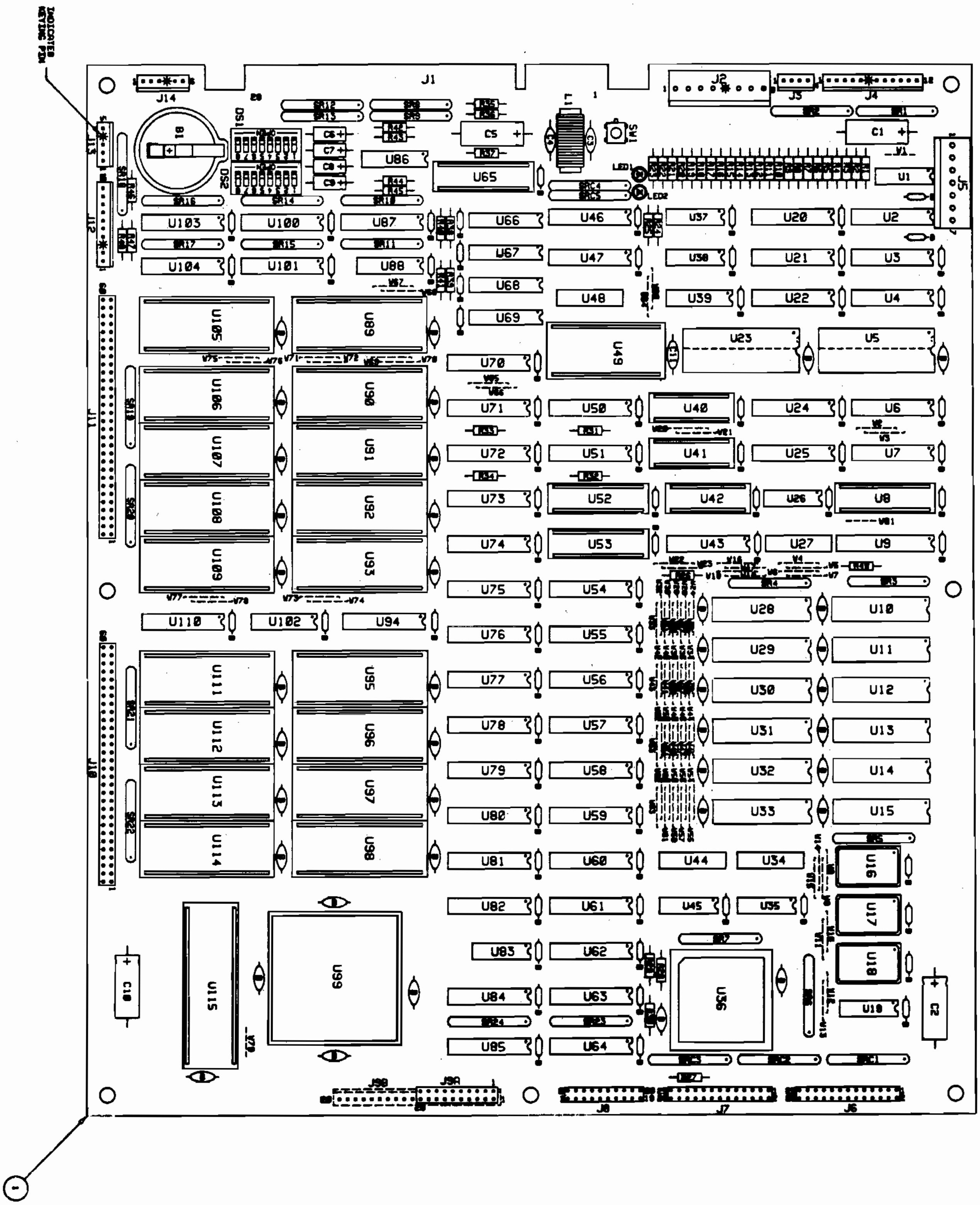
p/n D-11581-3044

Part Number	Ckt Designator	Description
5766-12130-00		Bare P. C. Board
5371-11067-00	U1	IC, D/A Conv, YM3012
a) 5700-09006-00		Socket, IC, 16-pin (U1)
5370-11066-00	U3	IC, Sound Processor, YM2151
a) 5700-09004-00		Socket, IC, 24-pin (U3)
5400-10320-00	U8	IC, µProcessor, MC68B09E
a) 5700-08985-00		Socket, IC, 40-pin (U8)
A-5343-3044-3	U4	IC, Audio ROM 1
A-5343-3044-4	U19	IC, Audio ROM 2
A-5343-3044-5	U20	IC, Audio ROM 3
a) 5700-10176-00		Socket, IC, 28-pin (U4, U19)
5371-09152-00	U11	IC, D/A Convtr, MC1408
5430-10322-00	U12	IC, PIA, MC68B21
5340-10139-00	U5	IC, RAM/S 5516-2 2Kx8
5281-09487-00	U16	IC, Dual D Flipflop, 74LS74
5281-10043-00	U13	IC, 74LS175
5281-09235-00	U21	IC,Triple NAND, 74LS10
5370-09321-00	U9, U10, U17, U18	IC, Op Amp, MC1458
5281-09215-00	U2	IC, Hex Inv, 74LS04
5281-09246-00	U14	IC, 2-4 Dec, 74LS139
5281-09745-00	U15	IC, Dual Mux, 74LS138
5370-09156-00	U22, U23	IC, Audio Amp, TDA2002
a) 5705-09199-00		Heatsink, #6030B
b) 4006-01003-06		Mach. Screw, 6-32 x 3/8
c) 4406-01117-00		Nut, 6-32 Hex.
d) 4703-00007-00		Lockwasher, #6 Ext.
5160-10269-00	Q1	Transistor, 2N3904, NPN
5080-10398-00	SP1	SIP 4.7K & 470pfd, 8R8C
5010-09161-00	R44, R48	Resistor, 1.0Ω, 1/2w, 5%
5010-09161-00	R35, R45	Resistor, 2.2Ω, 1/4w, 5%
5010-09361-00	R43, R46, R47	Resistor, 220Ω, 1/2w, 5%
5010-09358-00	R41, R42	Resistor, 1K, 1/4w, 5%
5010-08998-00	R2, R3,	Resistor, 2.2K, 1/4w, 5%
5010-08963-00	R7-R9	Resistor, 3.3K, 1/4w, 5%
5010-08991-00	R1, R4, R5, R11, R25 - R28, R33, R36, R37, R49, R50	Resistor, 4.7K, 1/4w, 5%

Part Number	Ckt Designator	Description
5010-10965-00	R14, R15	Resistor, 20K, 1/4w, 5%
5010-09034-00	R22-R24, R17, R34	Resistor, 10K, 1/4w, 5%
5010-09324-00	R6, R19, R20, R21	Resistor, 27K, 1/4w, 5%
5010-09162-00	R39	Resistor, 100K, 1/4w, 5%
5010-09331-00	R16	Resistor, 13K, 1/4W, 5%
5010-08772-00	R18	Resistor, 15KΩ, 1/4W, 5%
5010-08824-00	R32	Resistor, 43KΩ, 1/4W, 5%
5010-08846-00	R31	Resistor, 220KΩ, 1/4W, 5%
5010-08991-00	R12	Resistor, 4.7KΩ, 1/4W, 5%
5010-09219-00	R38	Resistor, 8.2K, 1/4W, 5%
5010-10258-00	R40	Resistor, 1M, 1/4w, 5%
5010-09179-00	R10	Resistor, 3.3M, 1/4w, 5%
5010-09333-00	R29	Resistor, 180KΩ, 1/4W, 5%
5010-09342-00	R30	Resistor, 36KΩ, 1/4W, 5%
5010-09534-00	W9	Resistor, 0Ω, 1/4w, 5%
5040-09343-00	C1, C3, C4, C8	Capacitor, 10µfd, 20v, ±20%
5040-10974-00	C12, C19, C24	Capacitor, 100µfd, 35v
5040-09776-00	C26, C30	Capacitor, 470µfd, 16v; +50, -10%
5040-12006-00	C29, C32	Capacitor, 1000µfd, 16v, 20%
5041-09243-00	C25, C28	Capacitor, 10µfd, 10v,±10%
5043-08960-00	C5, B (17)*	Capacitor, 0.01µfd, 50v,+80, -20%
5043-08996-00	C31, C33	Capacitor, 0.1µfd, 50v, ±20%
5043-09065-00	C13 - C15	Capacitor, 470 pfd, 50v, ±20%
5043-09492-00	C2, C34	Capacitor, 100 pfd, 50v, ±10%
5043-09844-00	C6	Capacitor, 47 pfd, 50v, ±20%
5043-09845-00	C16, C18, C20 - C23, C27	Capacitor, 1000 pfd, 50v, ±20%
5520-09020-00	X1	Crystal, 3.58 MHz
5521-10931-00	CR1	Oscillator, 8 MHz
5551-09822-00	L1 - L3	Inductor, 4.7 µH, 3A
5791-09437-00	J4	Connector, 20 pin, (Hdr), Rib. Cbl
5791-10862-04	J1, J2, J5	Connector, 4 pin (Hdr)
5791-10862-06	J3	Connector, 6 pin (Hdr)
16-8850-250		P.C.B. I.D. Label
20-9229		Thermal Compound

Notes: *17 capacitors (shown on diagram with "B" symbol) provide +5VDC filtering for ICs.
All capacitors are ceramic, 50v, axial, unless otherwise noted.
All resistors are 5%, 1/4w, Carbon Film, unless otherwise noted.

Y-UNIT CPU BOARD



Y-UNIT CPU ASSEMBLY
p/n C-13234-3044-K

Part No.	Ckt.Designator	Description
5770-12555-00		Bare PC Brd.
5281-09737-00	U1	IC, 74LS 86
5317-12211-00	U2, U20, U24, U43 U61, U62, U70	IC, 74ALS541
5317-12212-00	U3, U6, U7, U21, U25 U50, U58, U63, U64 U71, U72, U74, U79, U84, U85	74ALS574
5317-12208-00	U4, U22, U54-U57 U59, U60, U75-U78 U80, U81, U94, U110	74ALS245
5340-12242-00	U5, U23	IC, 8K x 8 S RAM
5700-12047-00	U8, U52, U53, U65	24 pin Socket
5340-12213-00	U10, U11, U28-U33	IC, 4461 VRAM
5521-12604-00	U16	40 MHZ Xtal
5521-10318-00	U17	24 MHZ Xtal
5283-10468-00	U19, U45	IC, 74F74
5019-10849-00	U27, U34, U44, U48	100Ω DIP Res.
5317-12305-00	U35	IC, 74ALS00
5700-12253-00	U36	68 pin Socket
5280-09309-00	U37	IC, 7407
5281-09487-00	U38	IC, 74LS74
5434-12255-00	U39	IC, MAX691
5700-09915-00	U40-U42	20 pin Socket
5311-12287-00	U47, U46, U87, U100 U101, U103, U104	IC, 74HC541
5700-10176-00	U49	28 pin Socket
5311-12285-00	U51, U73, U82	IC, 74HC573
5340-12014-00	U66-U69	IC, 4464 DRAM
5283-10552-00	U83	IC, 74F04
5370-12602-00	U86	IC, ULN2064B
5317-12023-00	U88	IC, 74ALS138
5700-12088-00	U89-U93, U95-U98 U105-U109, U111-U114	32 pin Socket
5700-12254-00	U99	144 pin Socket
5317-12024-00	U102	IC, 74ALS139
5700-08985-00	U115	40 pin Socket
5010--08991-00	R1,R24, R27	Res. 4.7KΩ 5% 1/4W
5010-10204-00	R2, R7, R12	Res. 1KΩ 2% 1/4W
5010-10205-00	R3, R8, R13	Res. 2KΩ 2% 1/4W
5010-10000-00	R4, R9, R14	Res. 3.9KΩ 5% 1/4W
5010-09219-00	R5, R10, R15	Res. 8.2KΩ 5% 1/4W
5010-08772-00	R6, R11, R16	Res. 15KΩ 5%1/4W
5010-09001-00	R23, R25	Res. 330Ω 5% 1/4W
5010-09036-00	R26, R29-R34	Res. 100Ω 5% 1/4W
5010-09416-00	R35-R37, R46-R48	Res. 470Ω 5% 1/4W
5010-08997-00	R38-R45	Res. 2.7Ω 5% 1/4W
5010-09534-00	W2, W8, W11, W12 W14, W20, W22, W24 W27, W28, W31, W32, W35, W39, W41, W43 W44, W46, W48, W50, W52, W54, W56, W58 W60, W62, W66, W68, W69, W72, W74, W76 W78, W80	Res. 0Ω
5043-08980-00	B	Cap. 01 µfd 10V
5040-08986-00	C1, C2, C5, C10	Cap 100µfd 10V
5043-09845-00	C3, C4	Cap. .001µfd 10V
5041-09243-00	C6-C9	Cap. 10µfd 10V
5043-8996-00	C11	Cap. .1µfd
5019-12611-00	SR1, SR2, SR8 SR9, SR12, SR13, SR18	SIP, 470Ω 5 Res.

Part No.	Ckt.Designator	Description
5019-09362-00	SR3, SR4, SR6 SR7, SR11, SR15 SR17, SR19-SR24 SRC1-SRC3	SIP, 4.7KΩ
5019-10143-00	SR5	SIP, 470Ω 9 Res.
5060-10396-00	SRC4, SRC5 SRC10, SRC14 SRC16	SIP. 4.7KΩ 470pf
5671-09019-00	LED1, LED 2	LED, Red
5551-09822-00	L1	Inductor, 4.7UH
5645-09025-00	DS1, DS2	DIP. Sw. 16 pin
5641-12551-00	SW1	Pushbutton Sw.
5881-12315-00	B1	Battery Holder
5791-10862-00	J2	8 pin Connector
5791-12461-00	J4	12 pin Connector
5791-10850-00	J6, J7	26 pin Ribbon Connector
5791-09437-00	J8	20 pin Ribbon Connector
5791-12461-10	J12	10 pin Connector

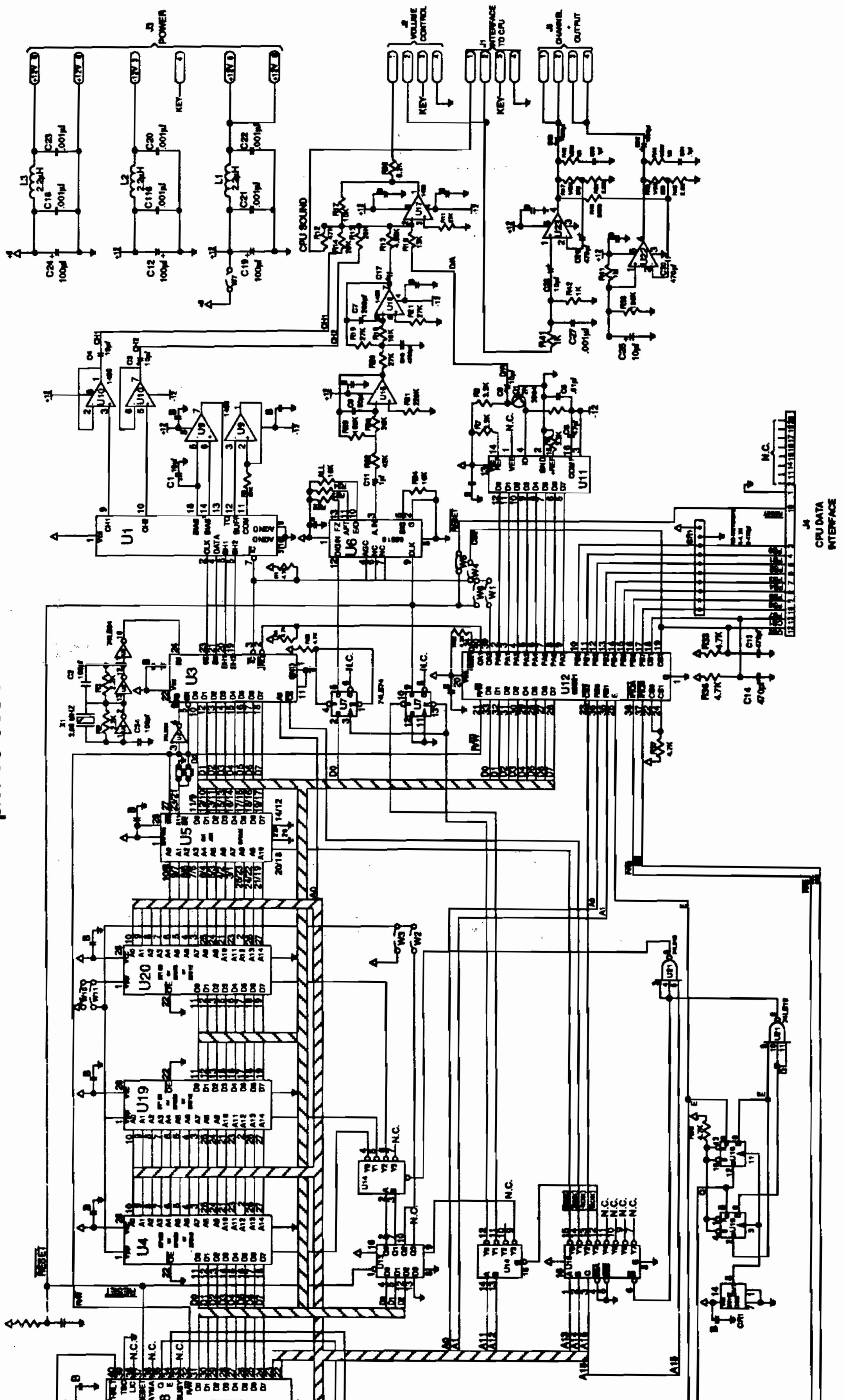
Part No.	Ckt. Designator	Description
C13235-1		CPU Subassembly (includes all parts except the following list)
A-5343-3044-22	U89	IC, Game EPROM
A-5343-3044-23	U105	IC, Game EPROM
A-5343-3044-11	U106	IC, Game EPROM
A-5343-3044-12	U107	IC, Game EPROM
A-5343-3044-13	U108	IC, Game EPROM
NOT USED	U109	IC, Game EPROM
A-5343-3044-15	U111	IC, Game EPROM
A-5343-3044-16	U112	IC, Game EPROM
A-5343-3044-17	U113	IC, Game EPROM
NOT USED	U114	IC, Game EPROM
NOT USED	U90	IC, Game EPROM
NOT USED	U91	IC, Game EPROM
NOT USED	U92	IC, Game EPROM
NOT USED	U93	IC, Game EPROM
A-5343-3044-6	U95	IC, Game EPROM
A-5343-3044-7	U96	IC, Game EPROM
A-5343-3044-8	U97	IC, Game EPROM
NOT USED	U98	IC, Game EPROM
A-5346-3044-1	U8	IC, PLD Color RAM Control
A-5346-3044-2	U40	IC, PLD Address Decode
A-5346-3044-3	U41	IC, PLD Video RAM Control
A-5346-3044-4	U42	IC, PLD Local Control
A-5346-3044-5	U52	IC, PLD Video RAM Sequencer
A-5346-3044-6	U53	IC, PLD Image ROM Control
A-5346-3044-7	U65	IC, PLD Miscellaneous Control
A-5346-3044-8	U115	IC, PLD Autoerase Controller
5340-12558-00	U49	IC, 8K x 8 Static RAM 150ns Low Power
5400-12220-00	U36	IC, TMS34010-50 GSP
5410-12239-00	U99	IC, Custom Asic
5880-11056-00	B1	Battery, Lithium 3V

SMASH TV

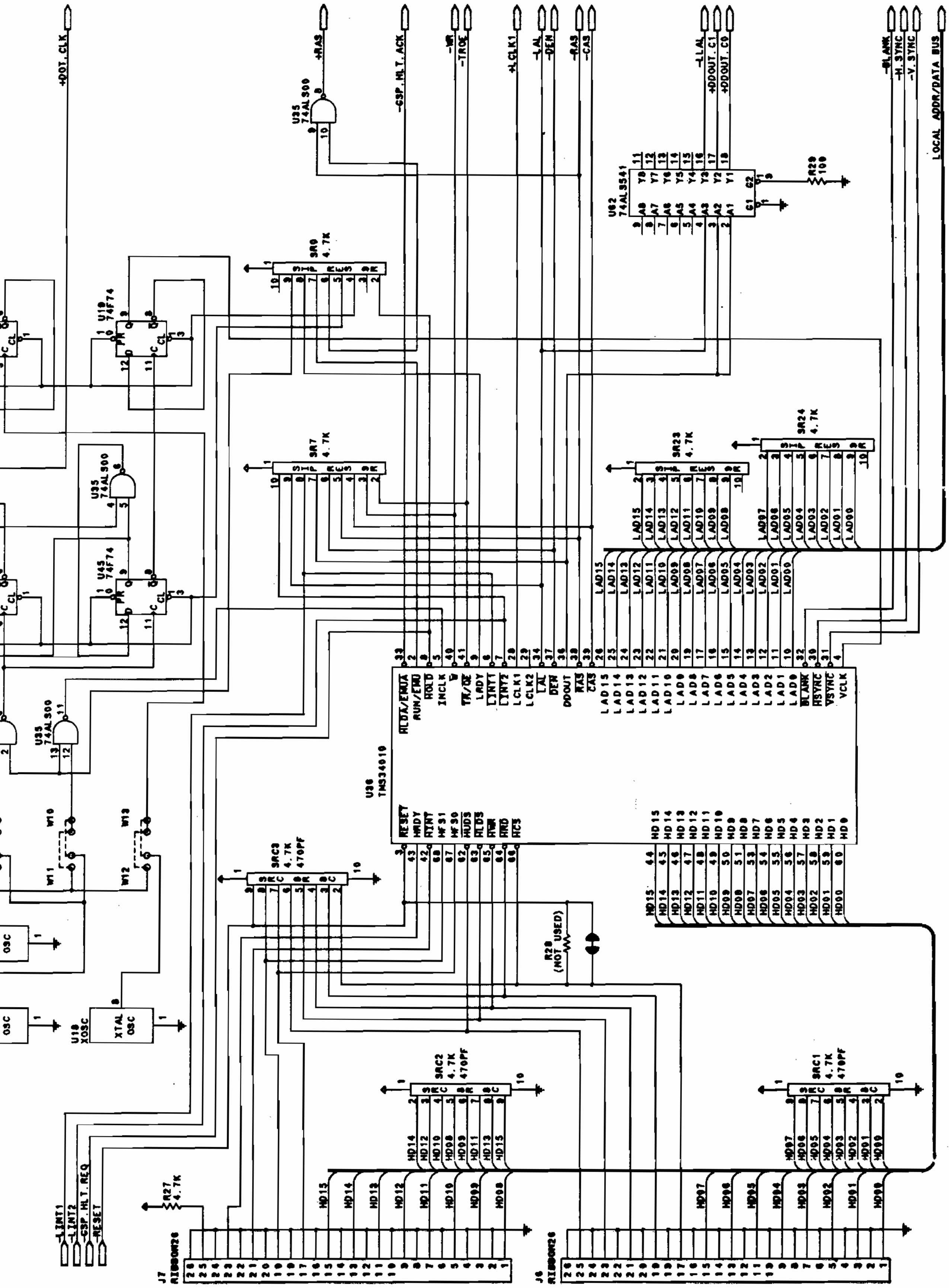
SECTION
THREE

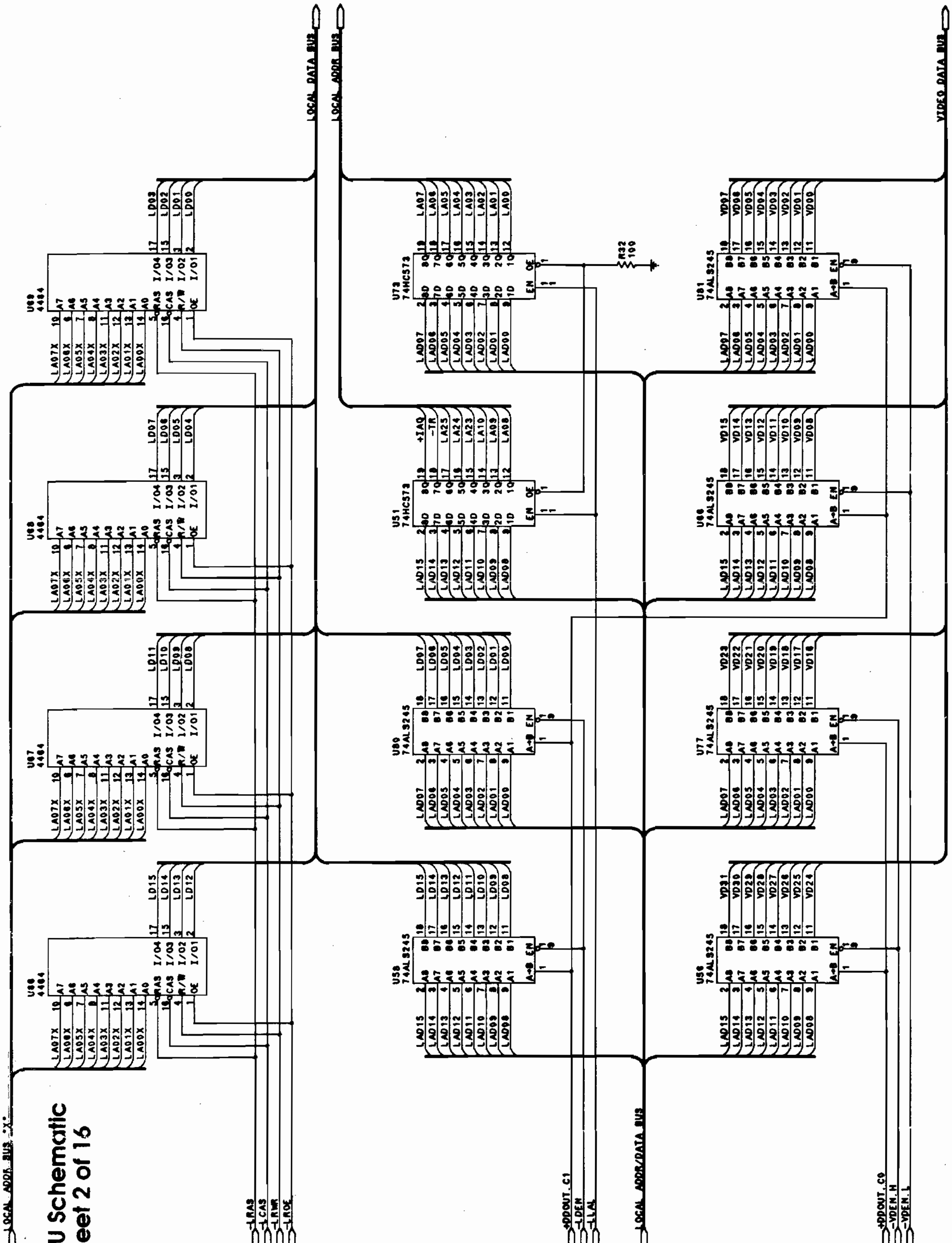
Diagrams & Schematics

AUDIO SCHEMATIC
p/n 16-9084



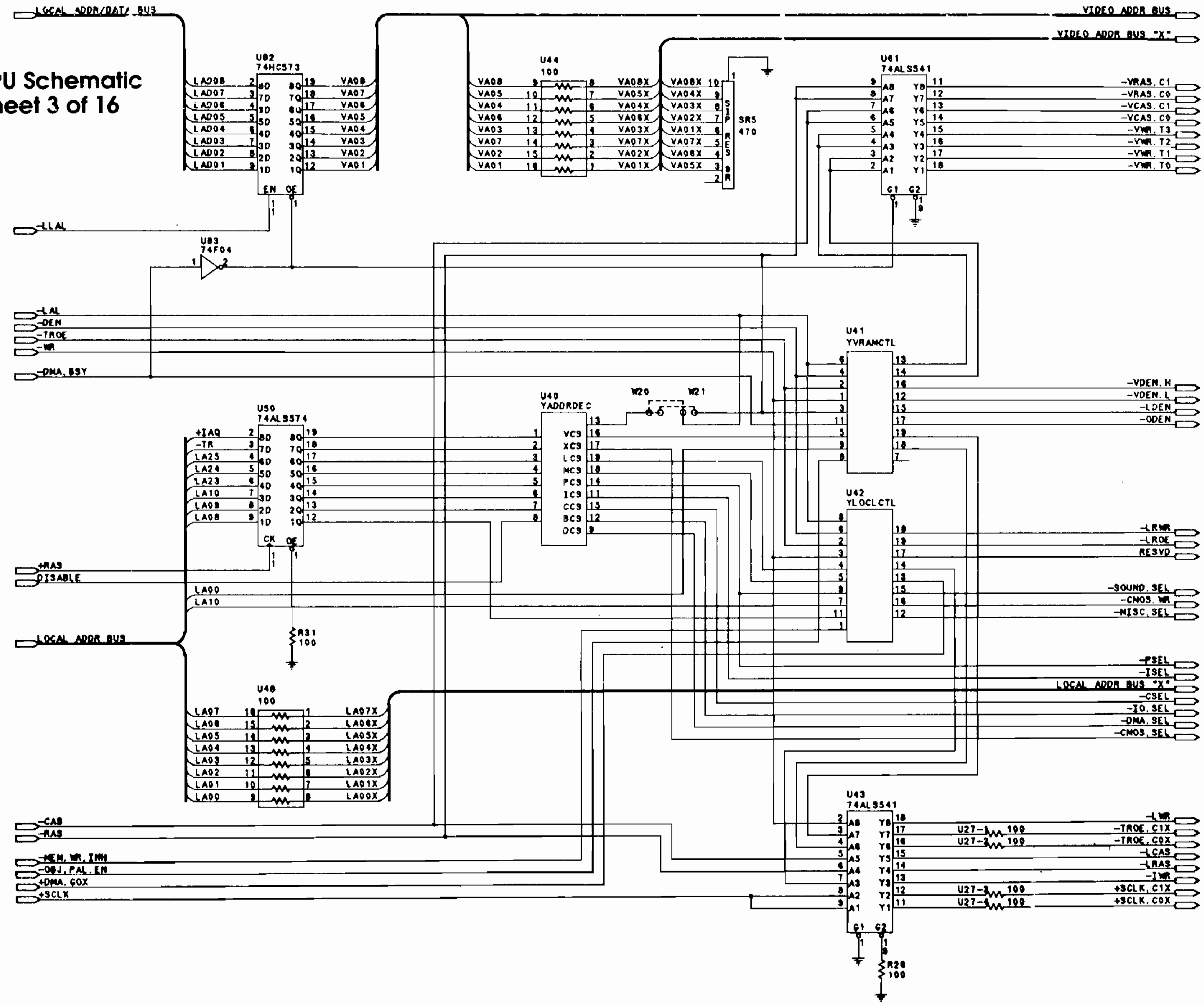
CPU Schematic
Sheet 1 of 16

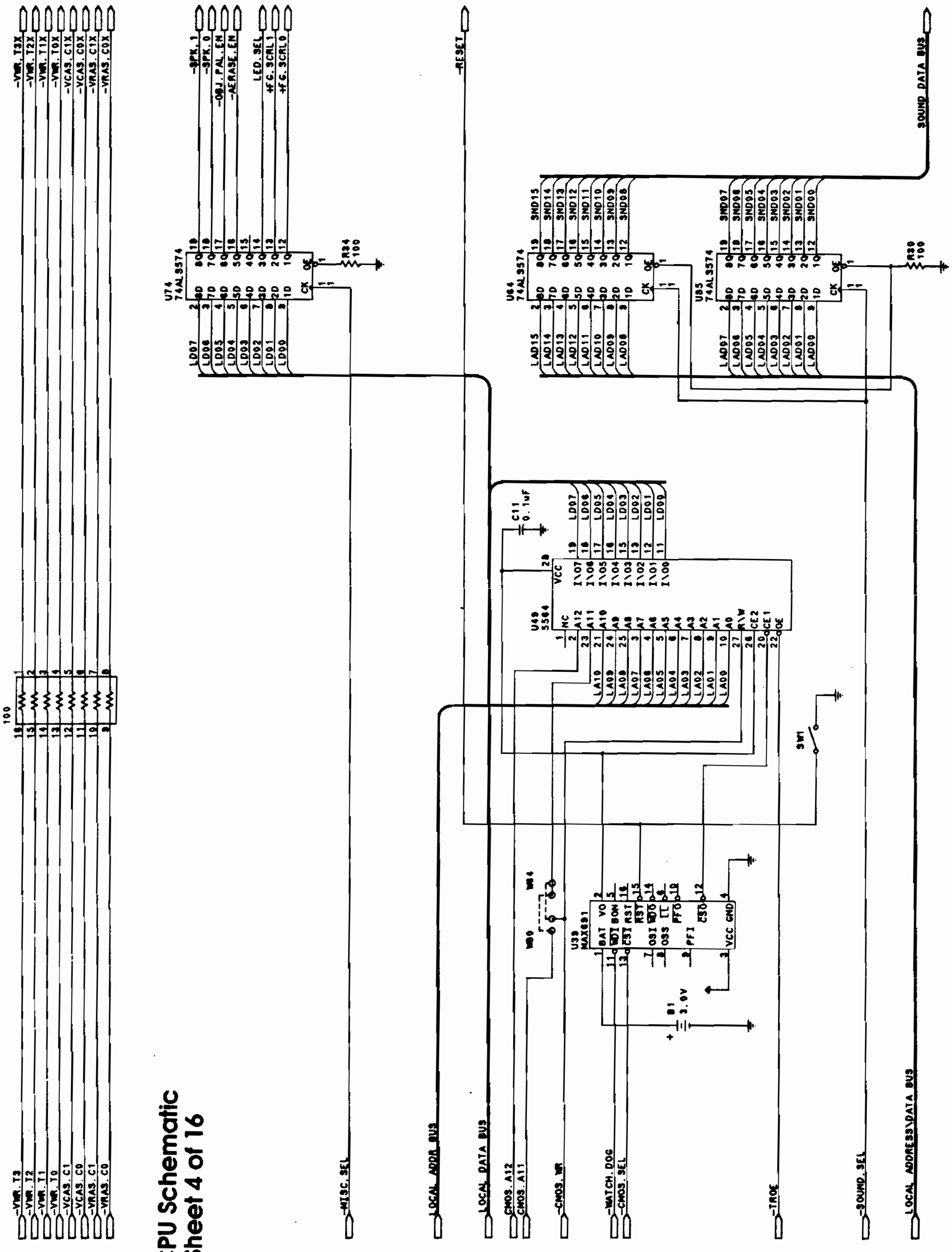




CPU Schematic
Sheet 2 of 16

CPU Schematic
Sheet 3 of 16

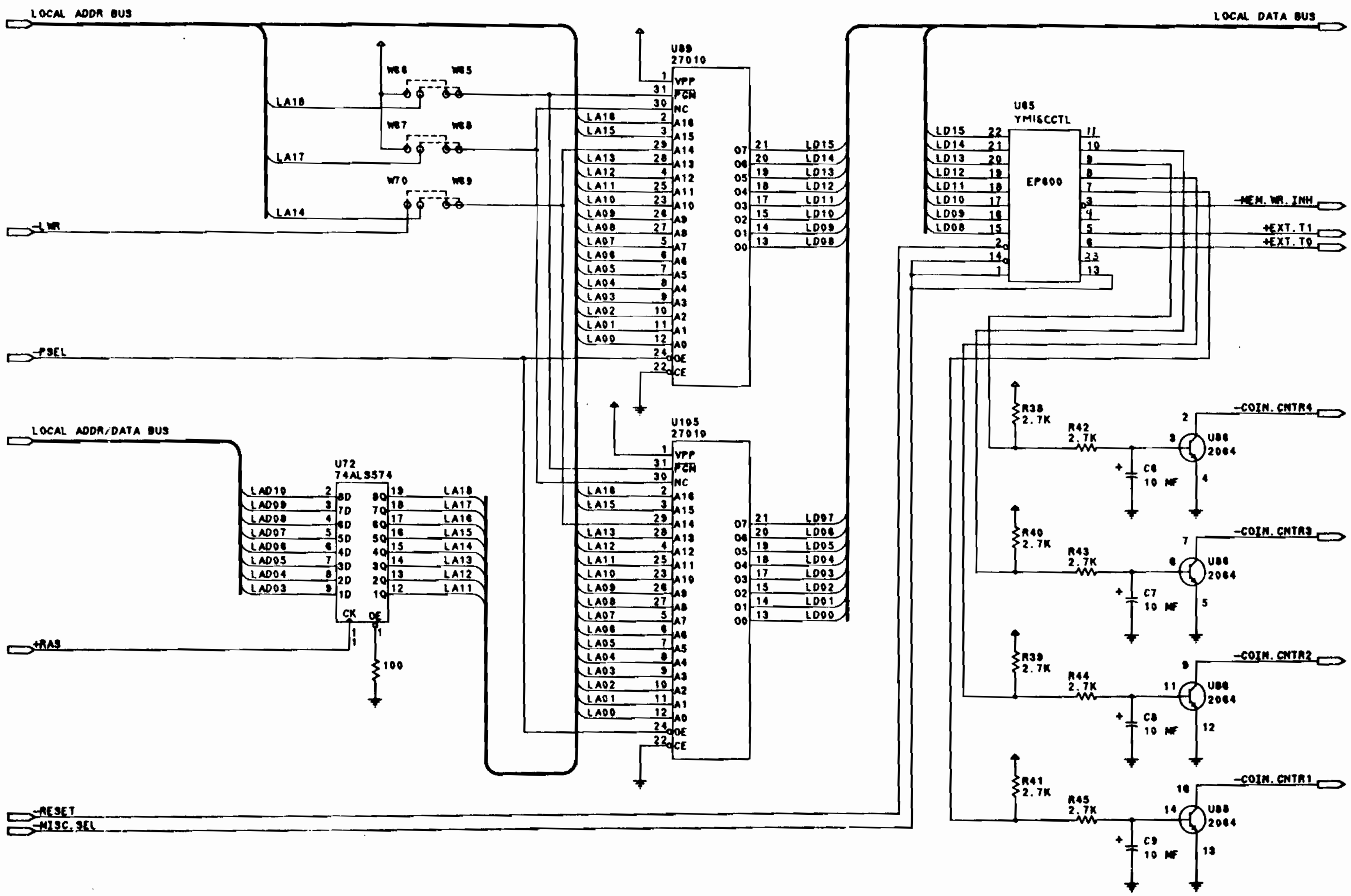




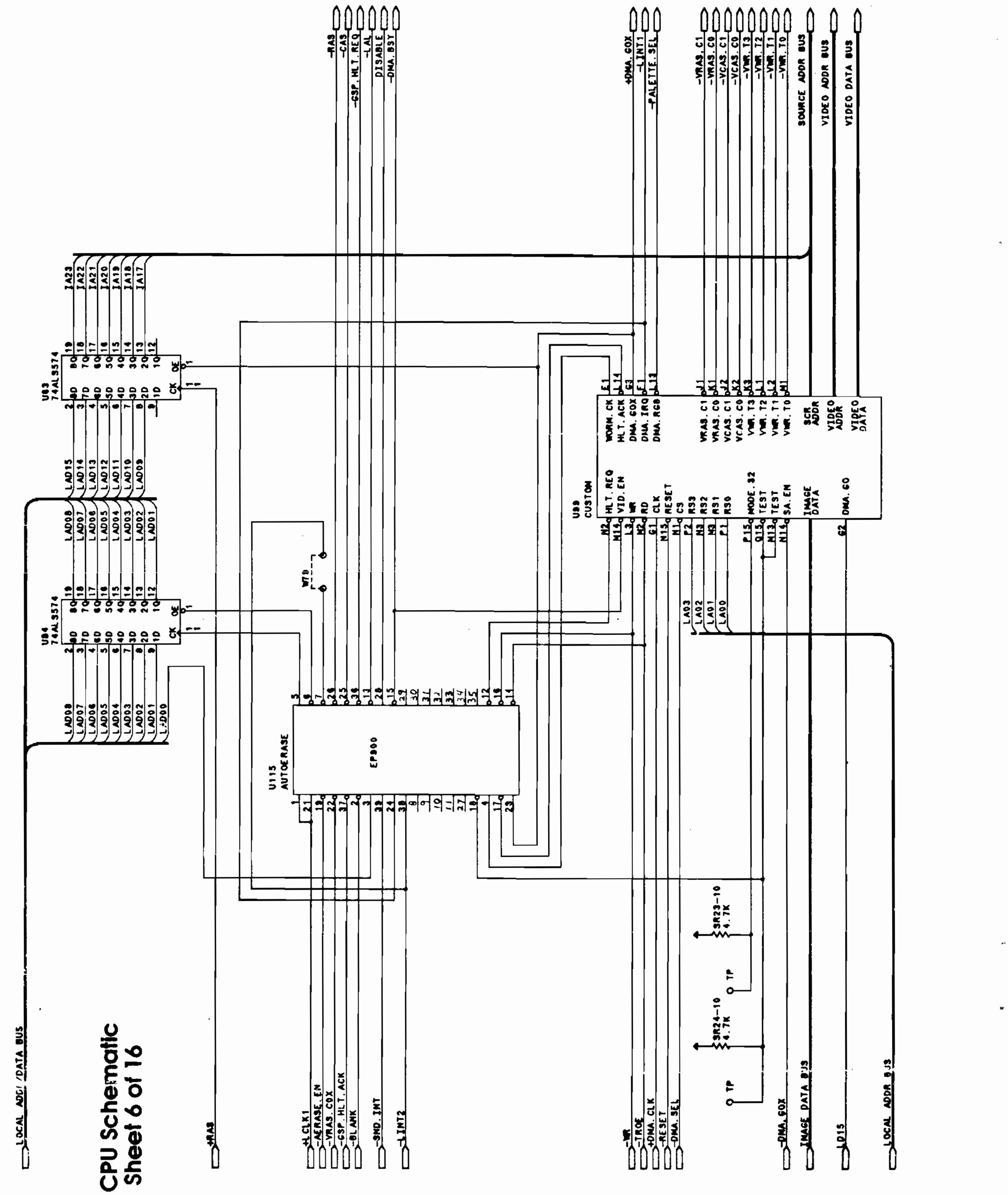
CPU Schematic
Sheet 4 of 16

CPU Schematic
Sheet 5 of 16

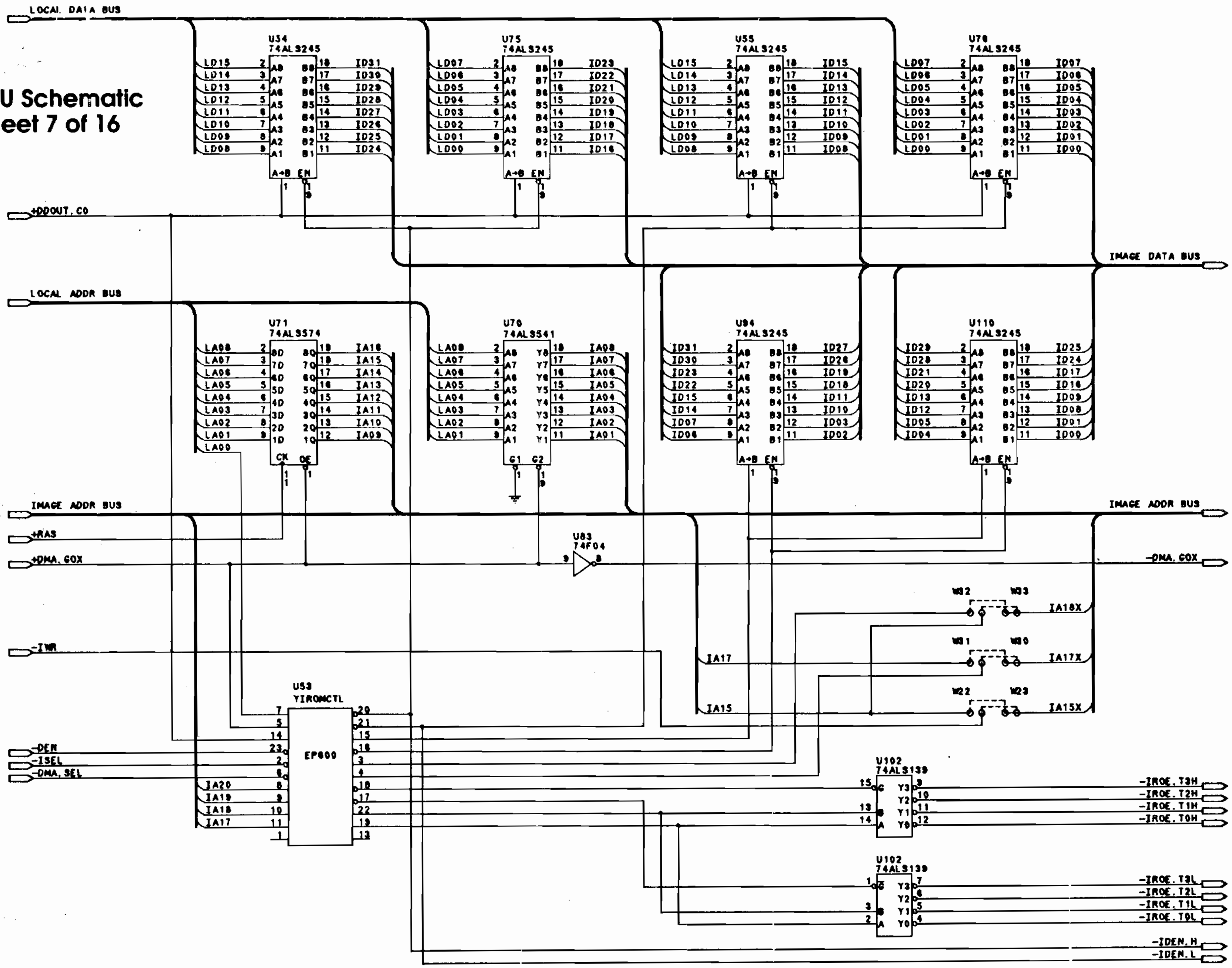
PROGRAM MEMORY



CPU Schematic
Sheet 6 of 16

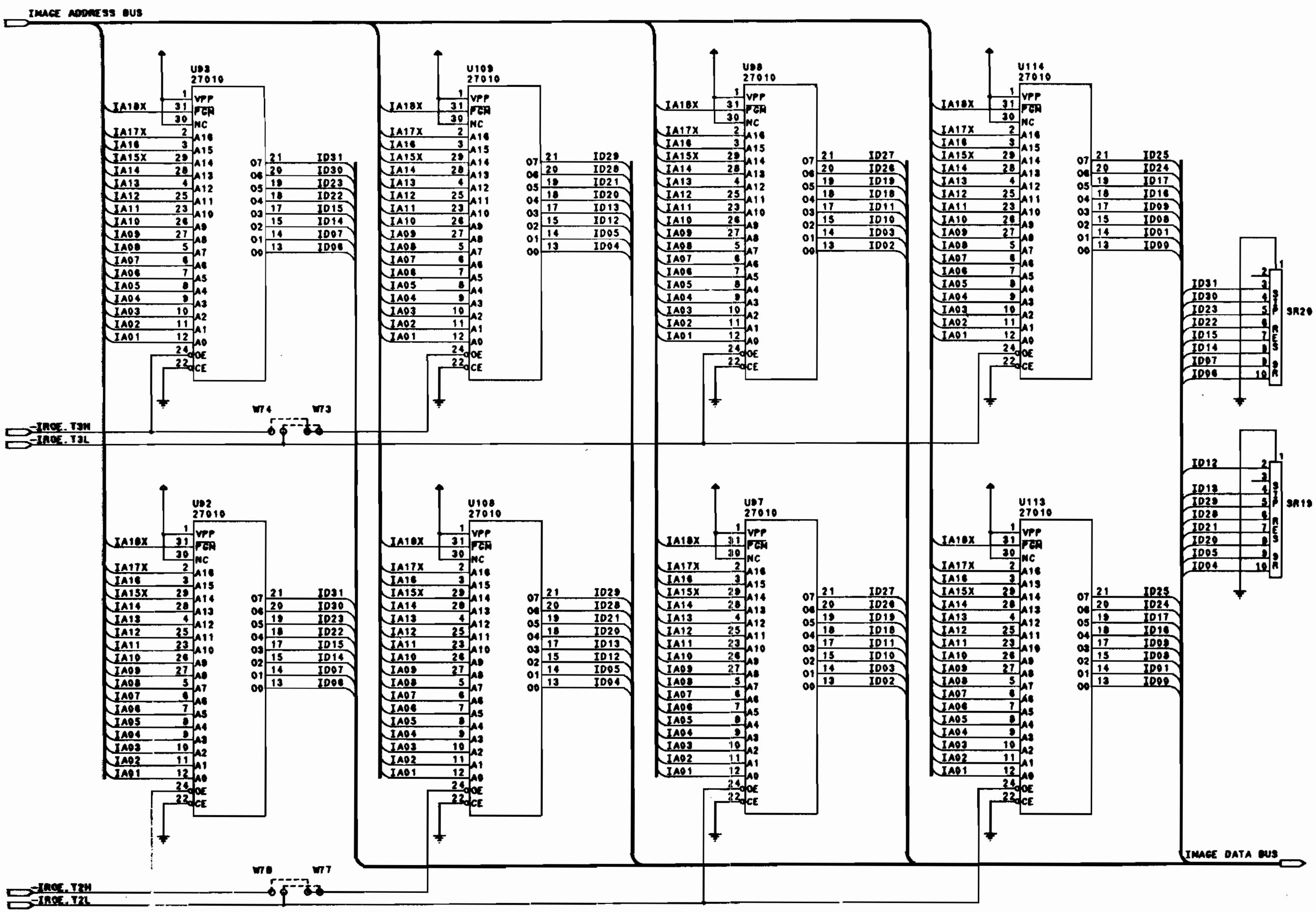


CPU Schematic
Sheet 7 of 16

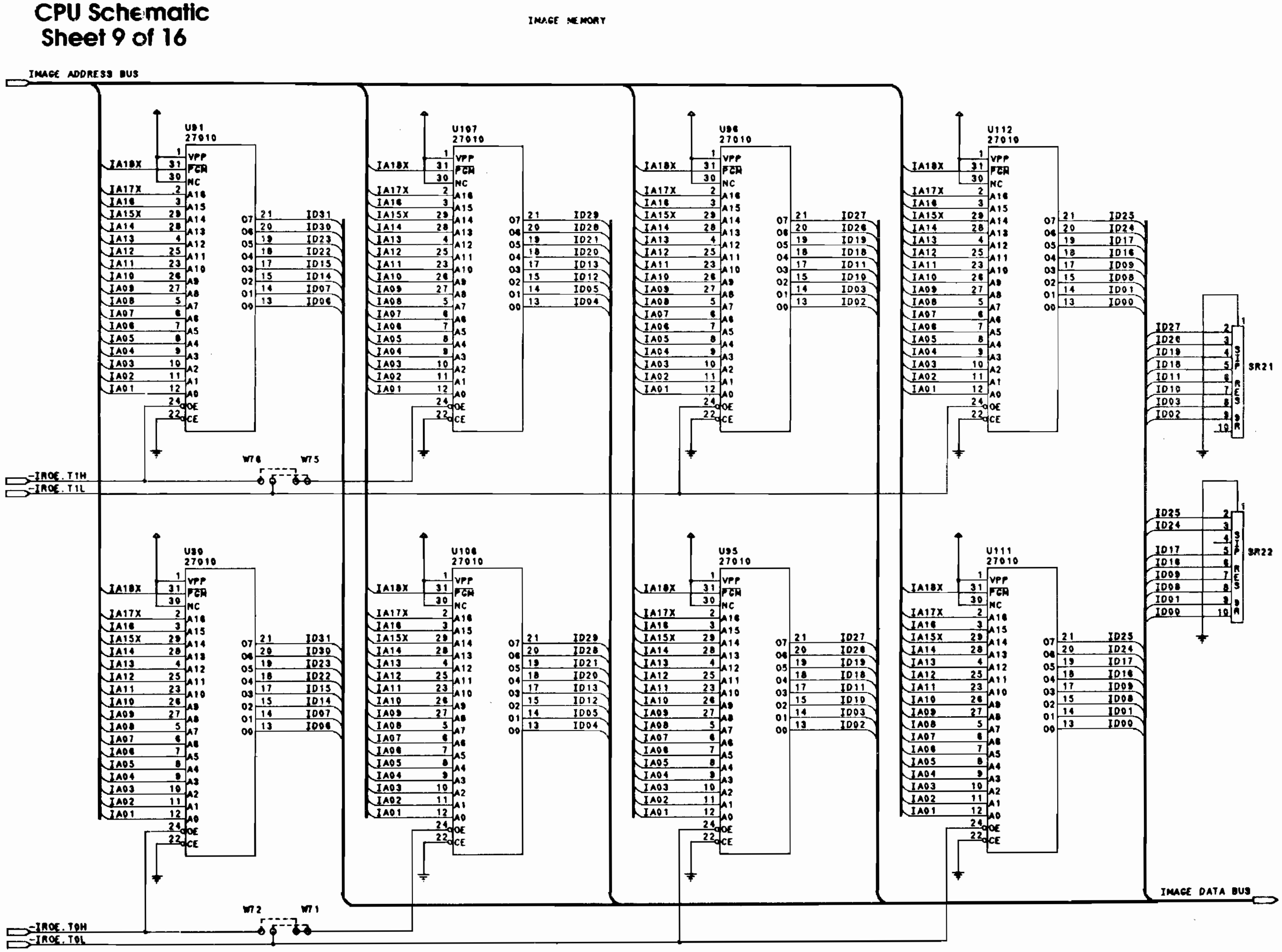


CPU Schematic
Sheet 8 of 16

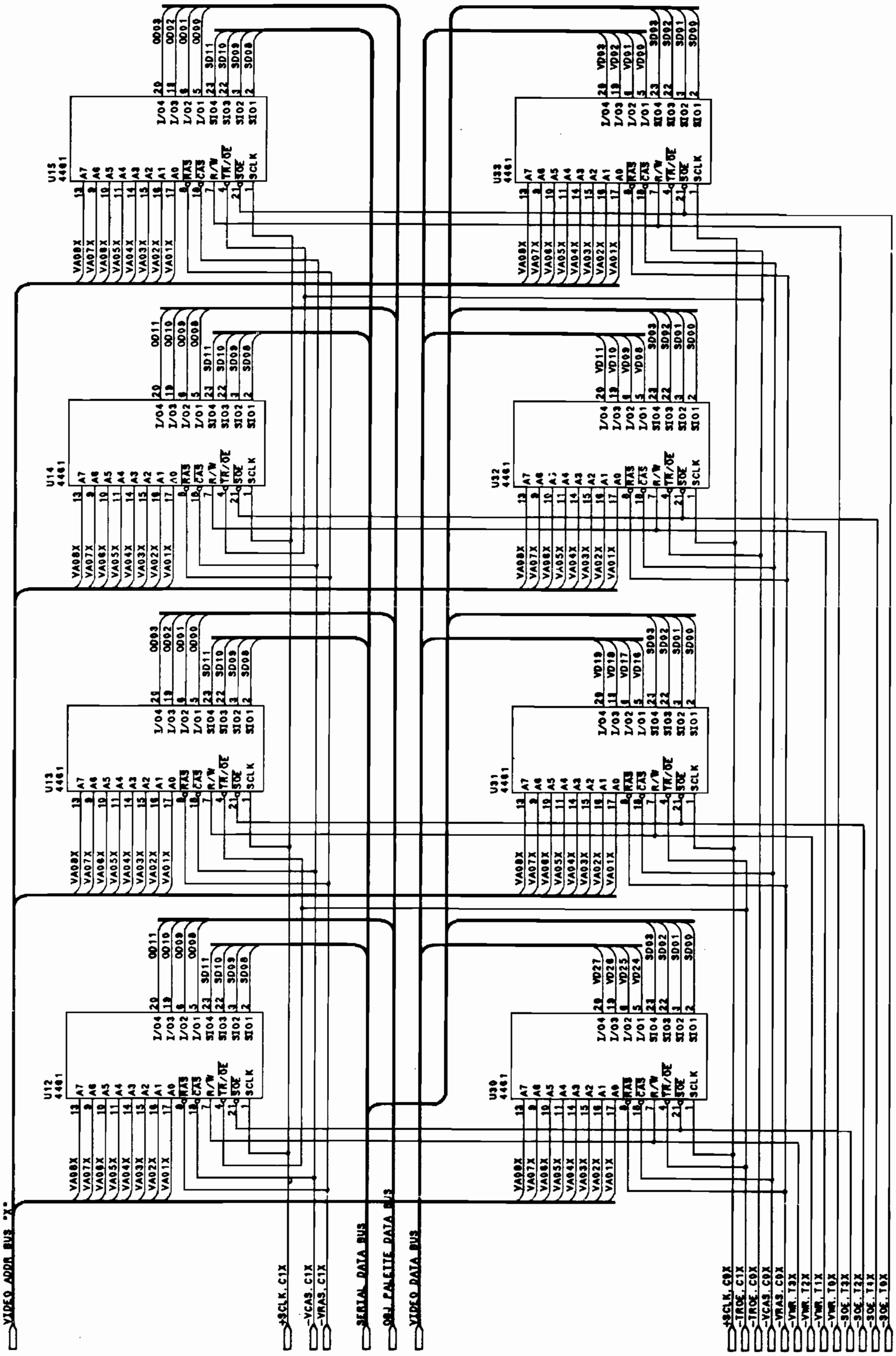
IMAGE MEMORY

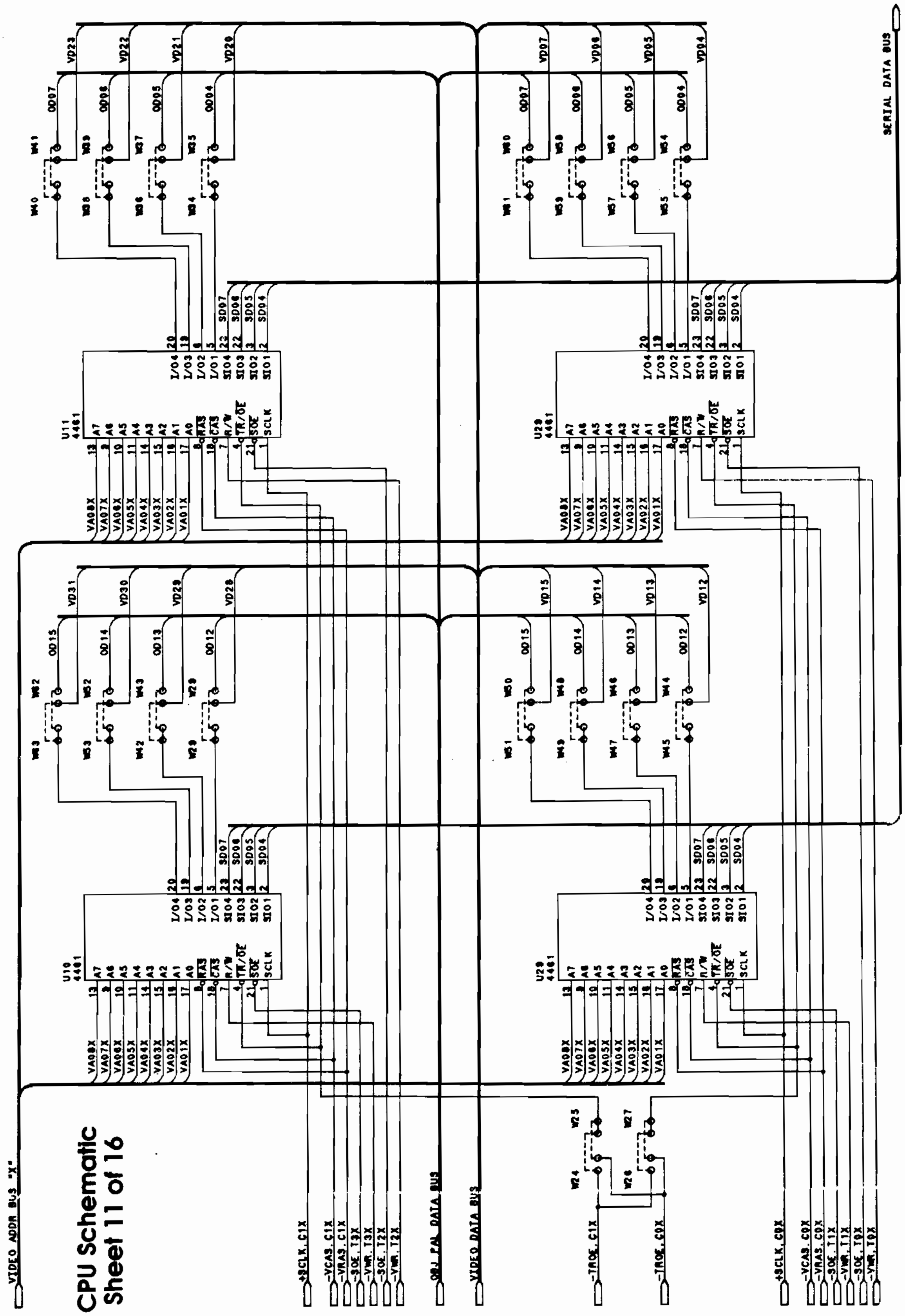


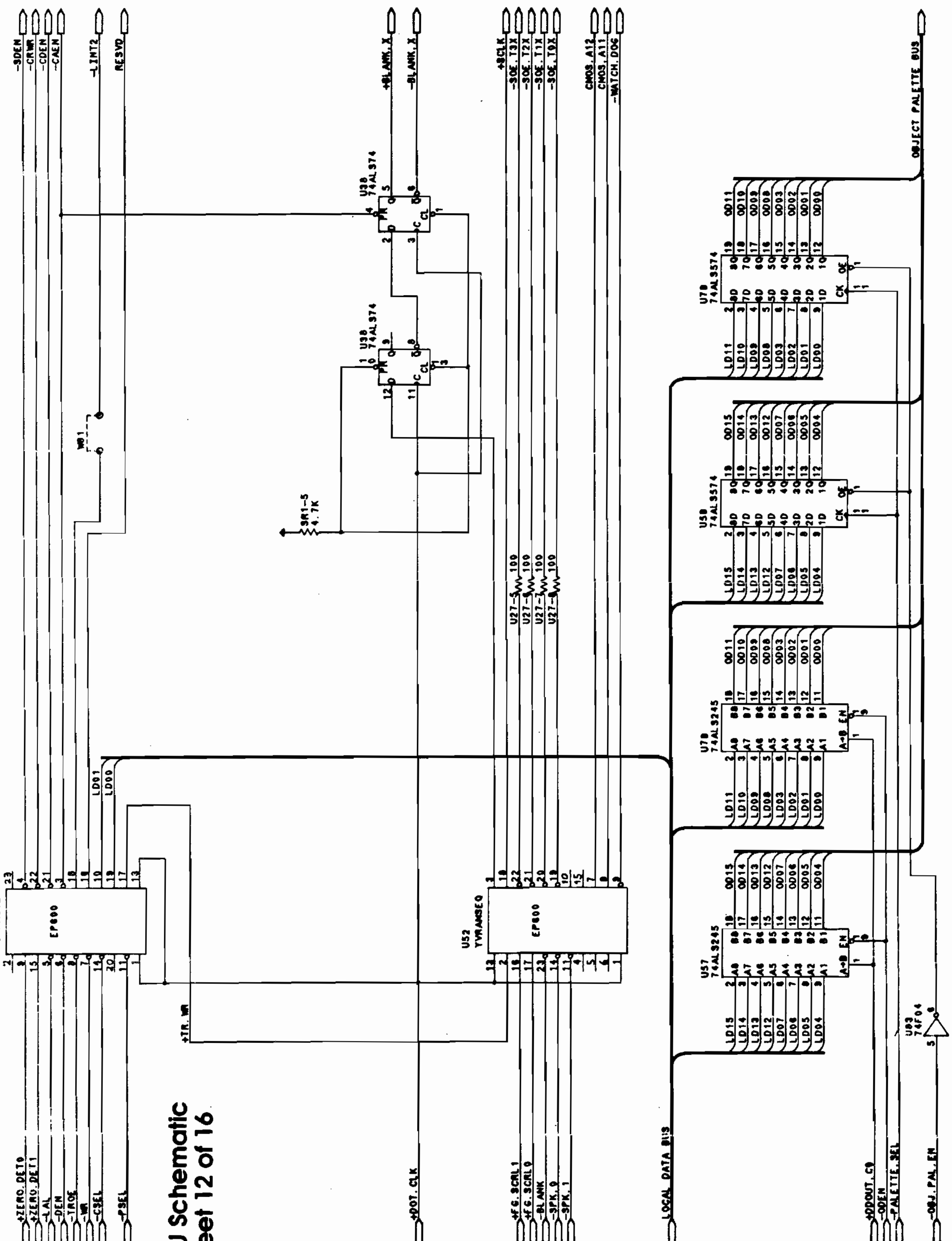
CPU Schematic
Sheet 9 of 16



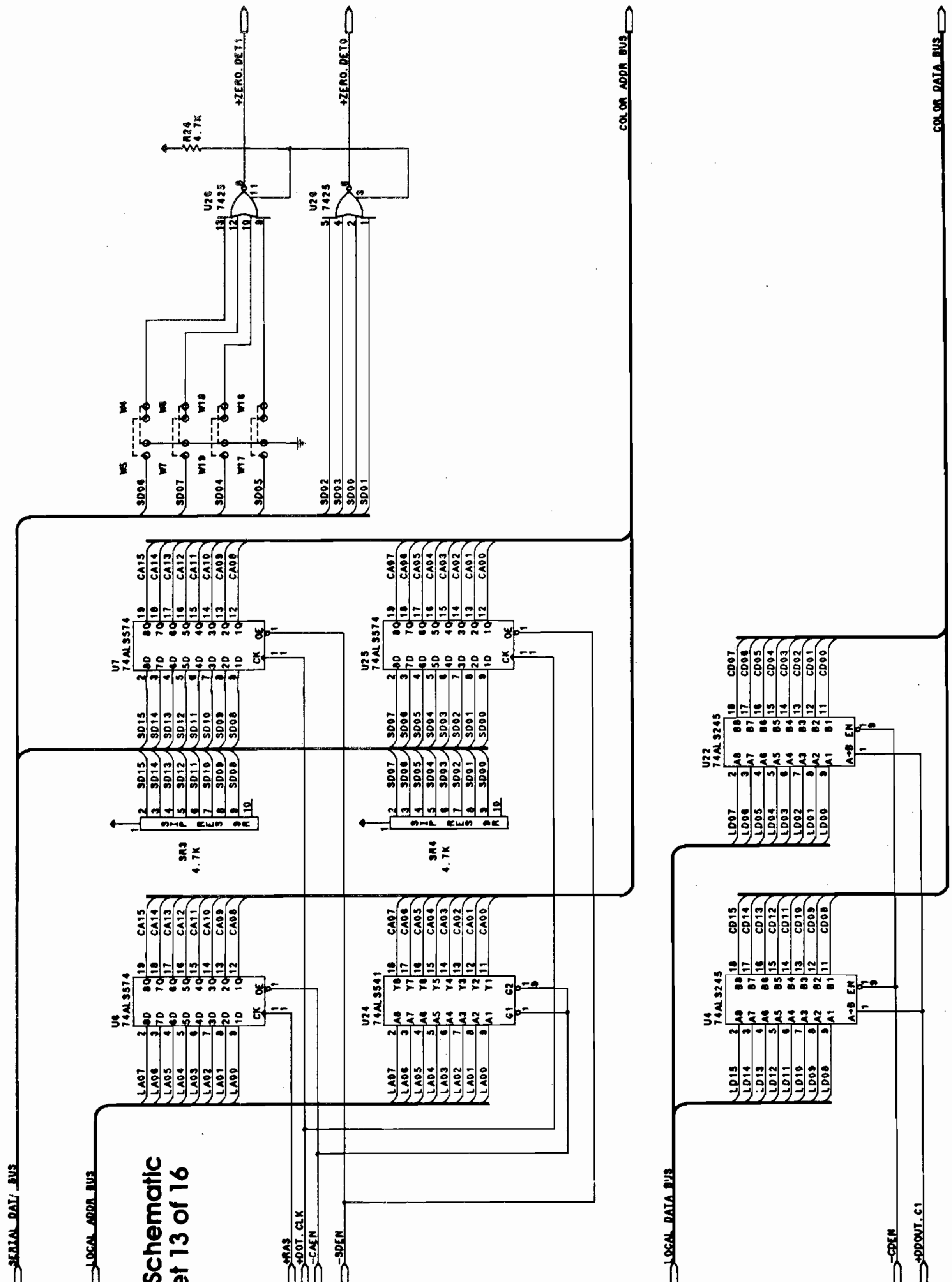
CPU Schematic
Sheet 10 of 16




CPU Schematic
Sheet 11 of 16
VIDEO ADDR BUS "X"
OBJ PAL DATA BUS
VIDEO DATA BUS
SERIAL DATA BUS
U11
4461
U10
4461
U29
4461
+SCLK.C1X
-VCAS.C1X
-VRAS.C1X
-SOE.T3X
-VWR.T3X
-SOE.T2X
-VWR.T2X
-TRDE.C1X
-TRDE.C0X
+SCLK.C0X
-VCAS.C0X
-VRAS.C0X
-SOE.T1X
-VWR.T1X
-SOE.T0X
-VWR.T0X

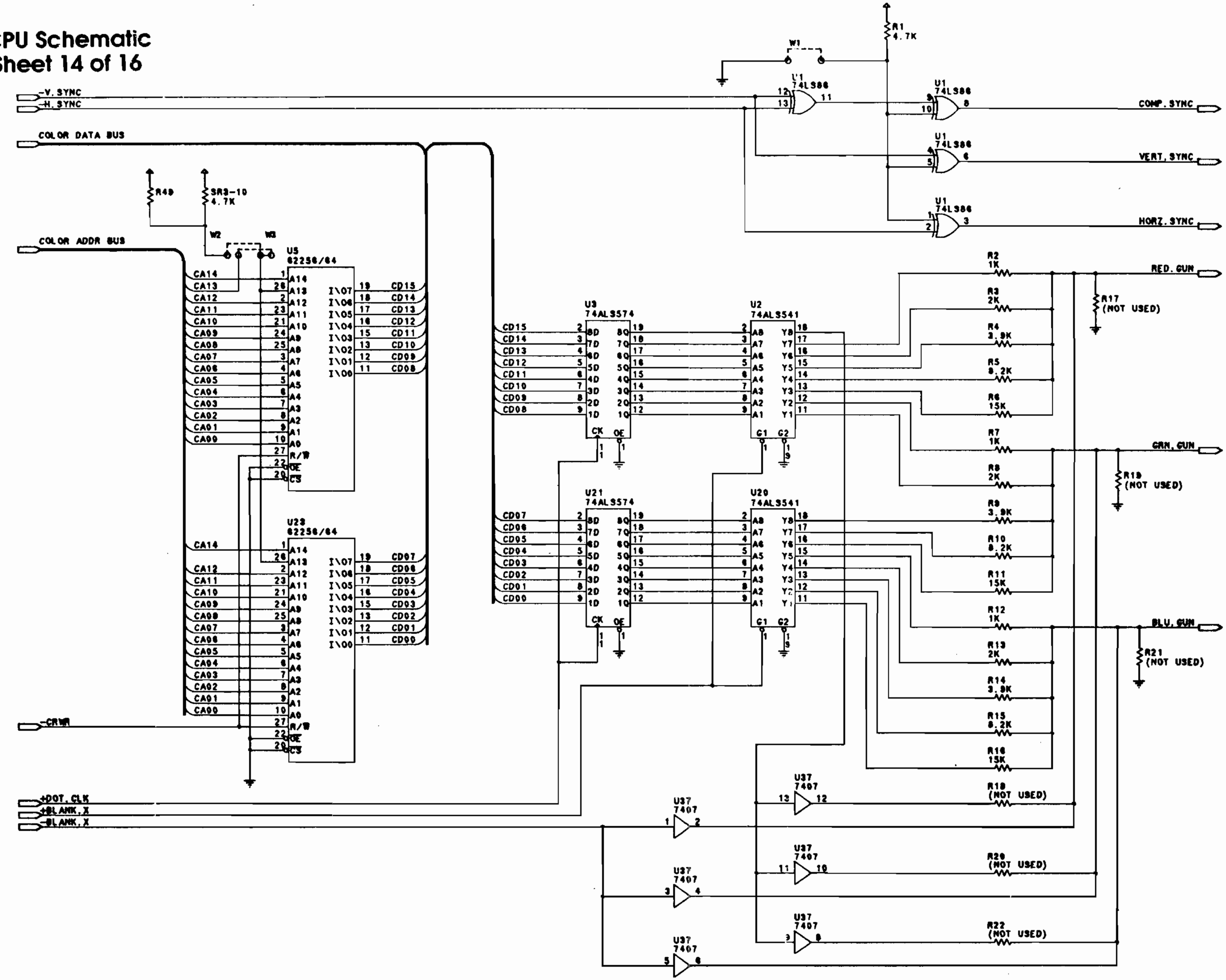


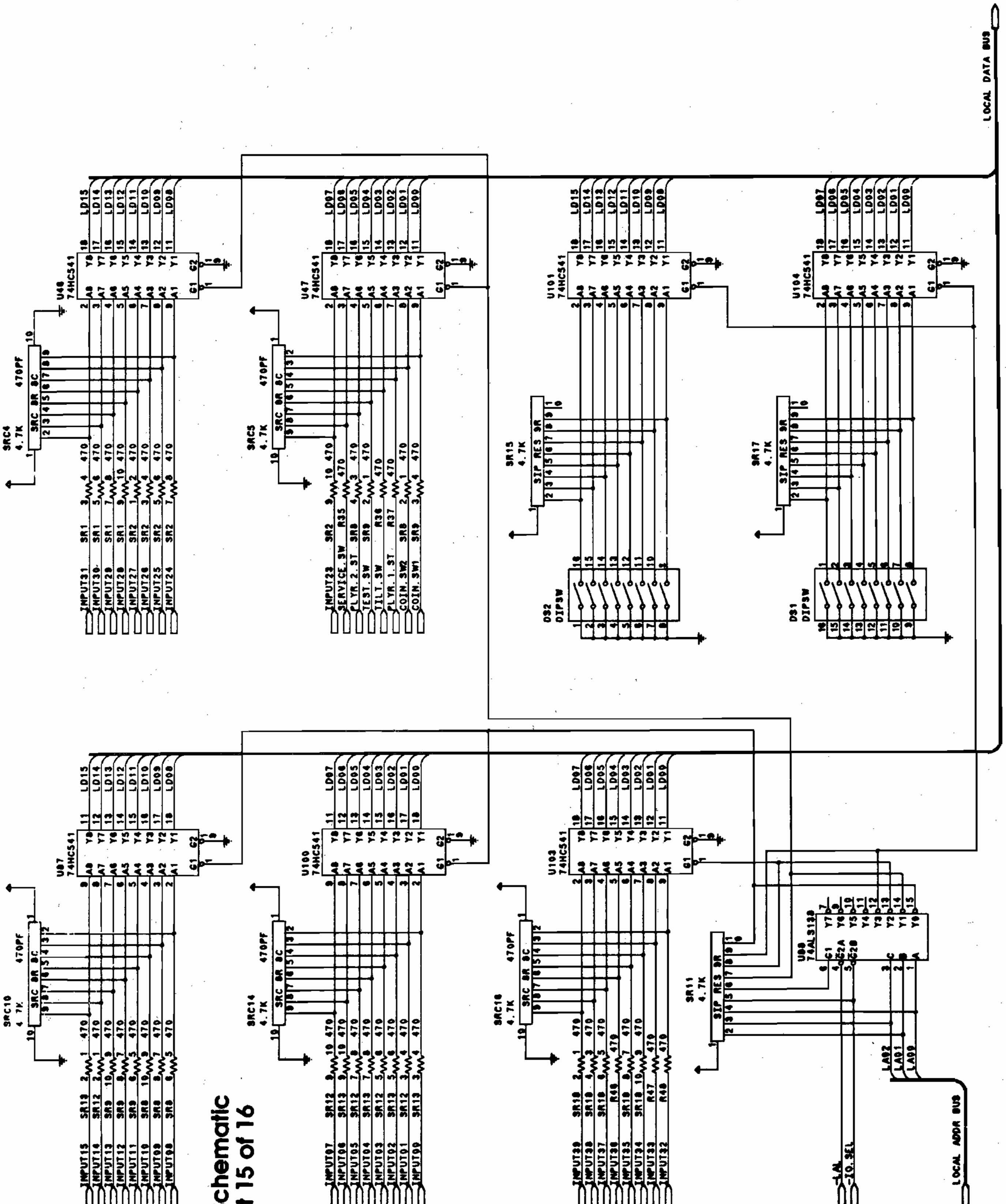
CPU Schematic
Sheet 12 of 16



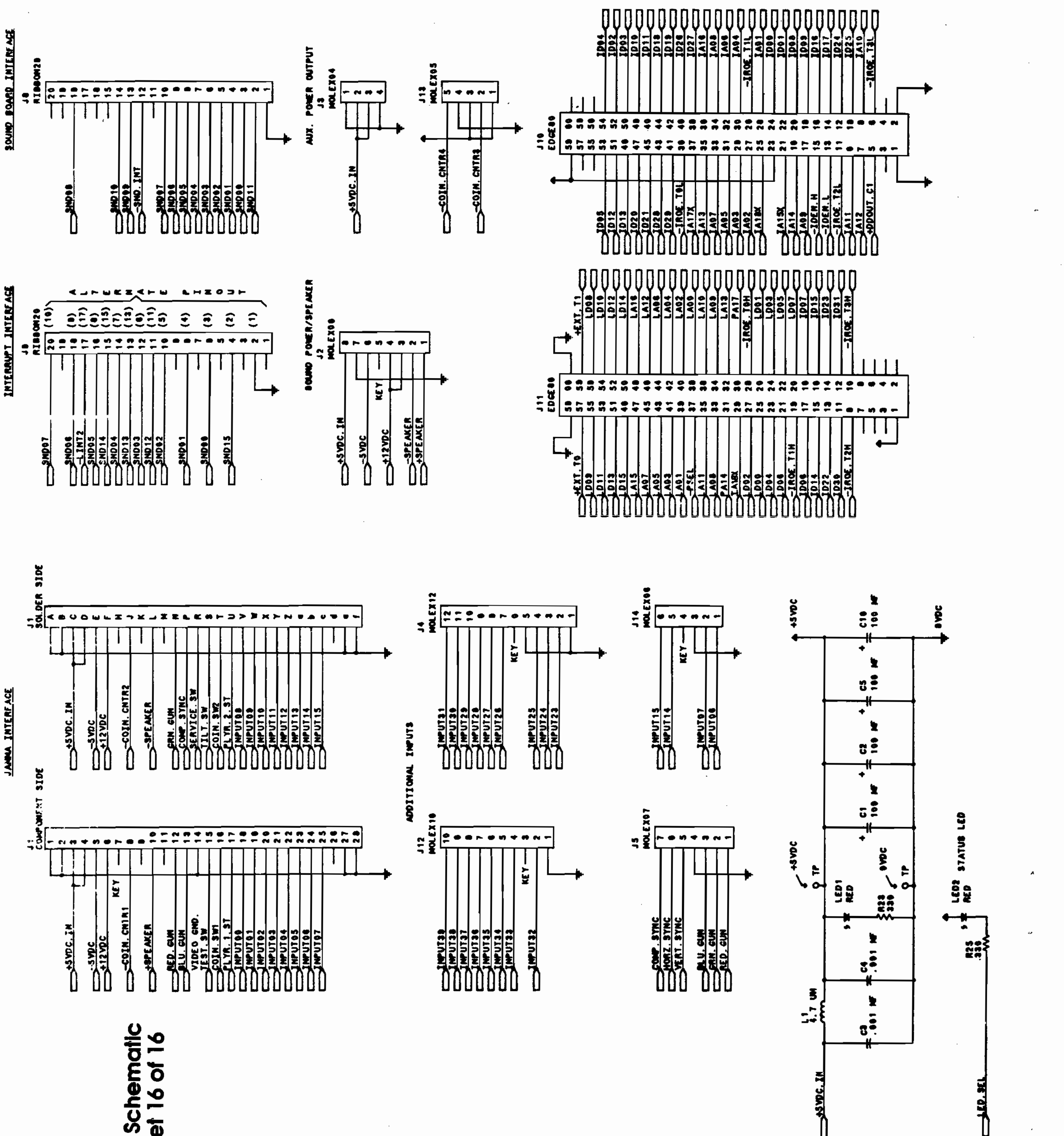
CPU Schematic
Sheet 13 of 16

CPU Schematic
Sheet 14 of 16





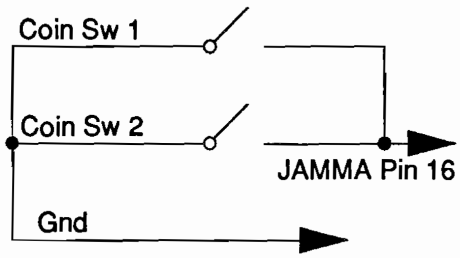
CPU Schematic
Sheet 15 of 16

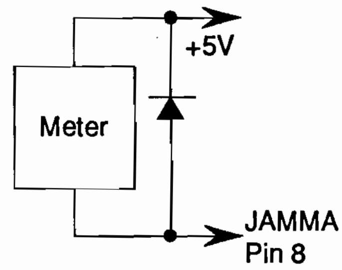


CPU Schematic
Sheet 16 of 16

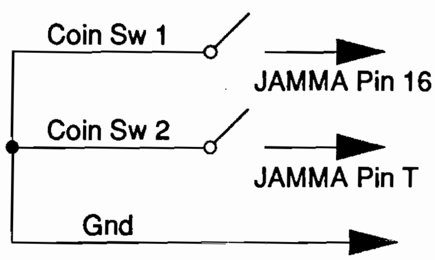
COIN SWITCH AND METER WIRING

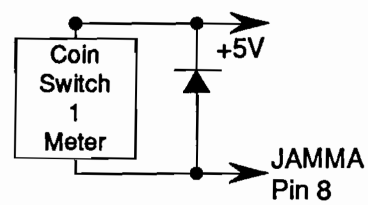
- **Option 1**



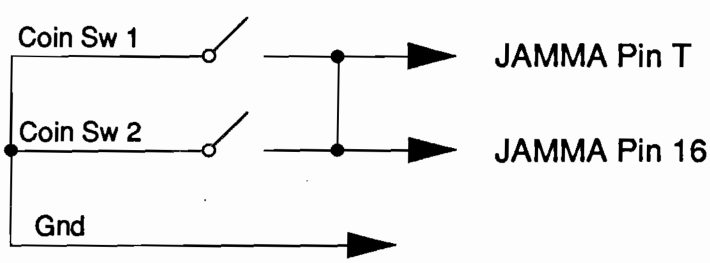


- **Option 2**



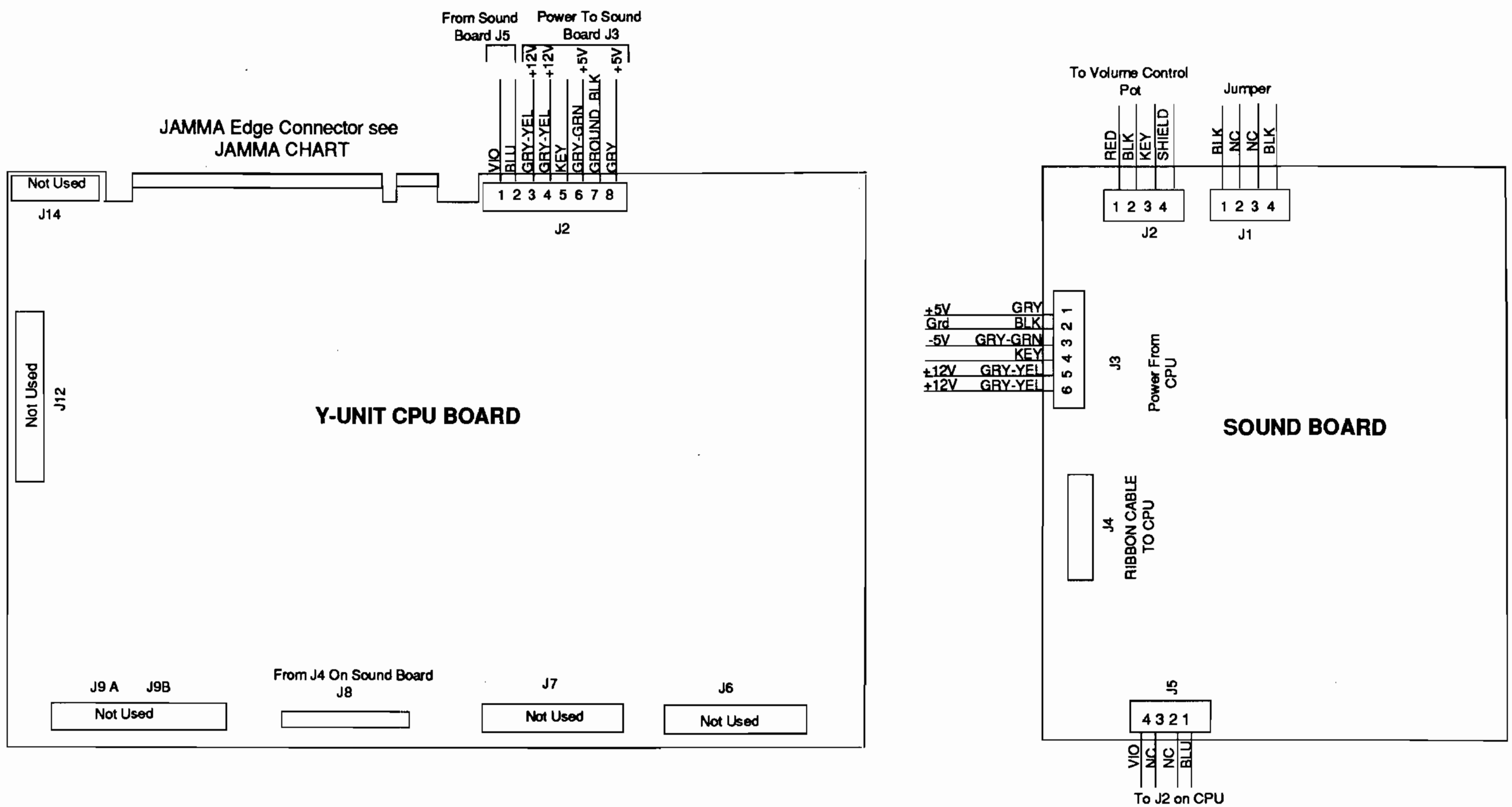


Wrong Way !



**Do NOT connect the coin switches this way.
This Circuit is INCORRECT and will cause twice as many credits per coin.**

SMASH TV KIT INTERBOARD WIRING

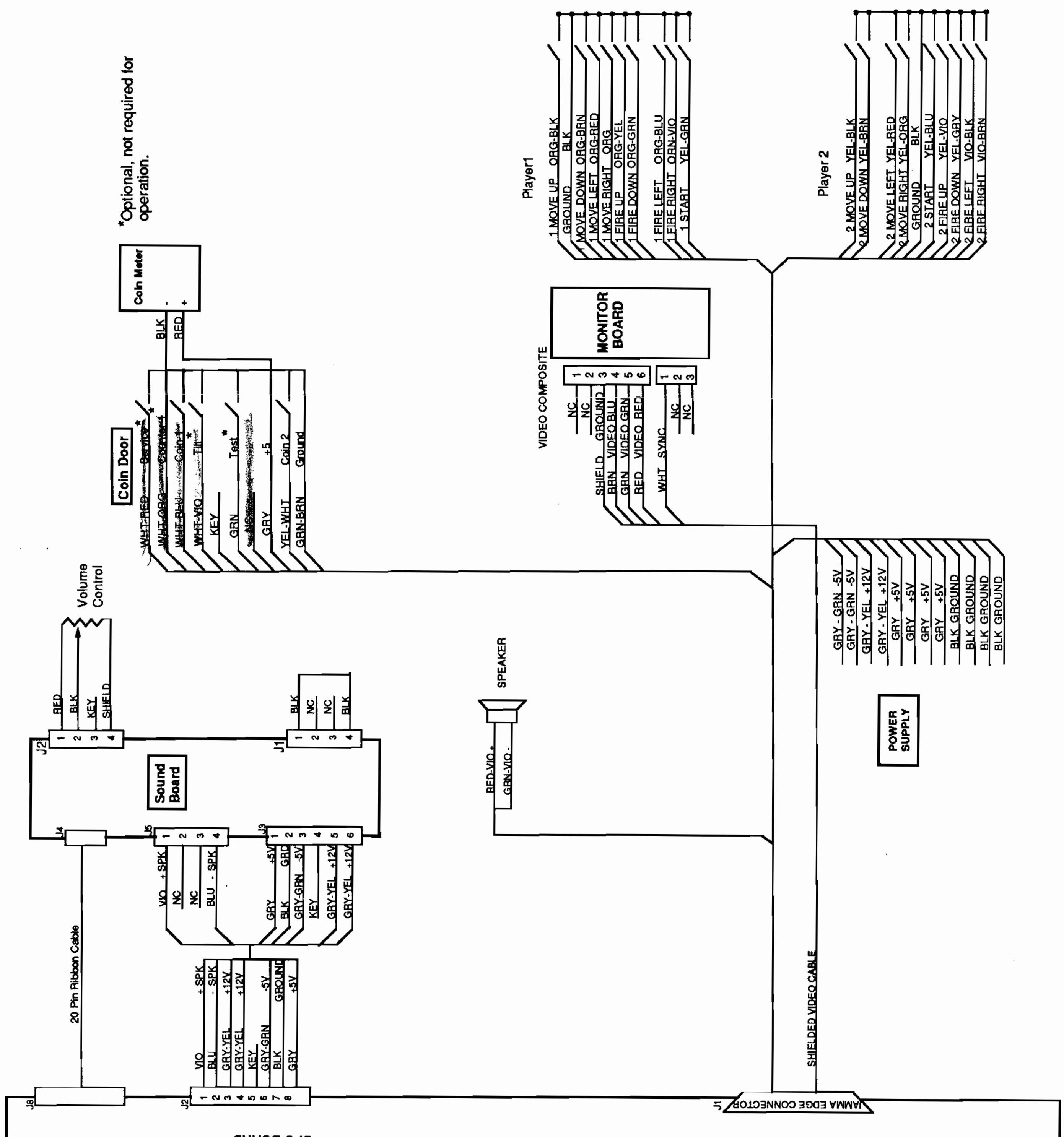


SMASH TV
Jamma Chart

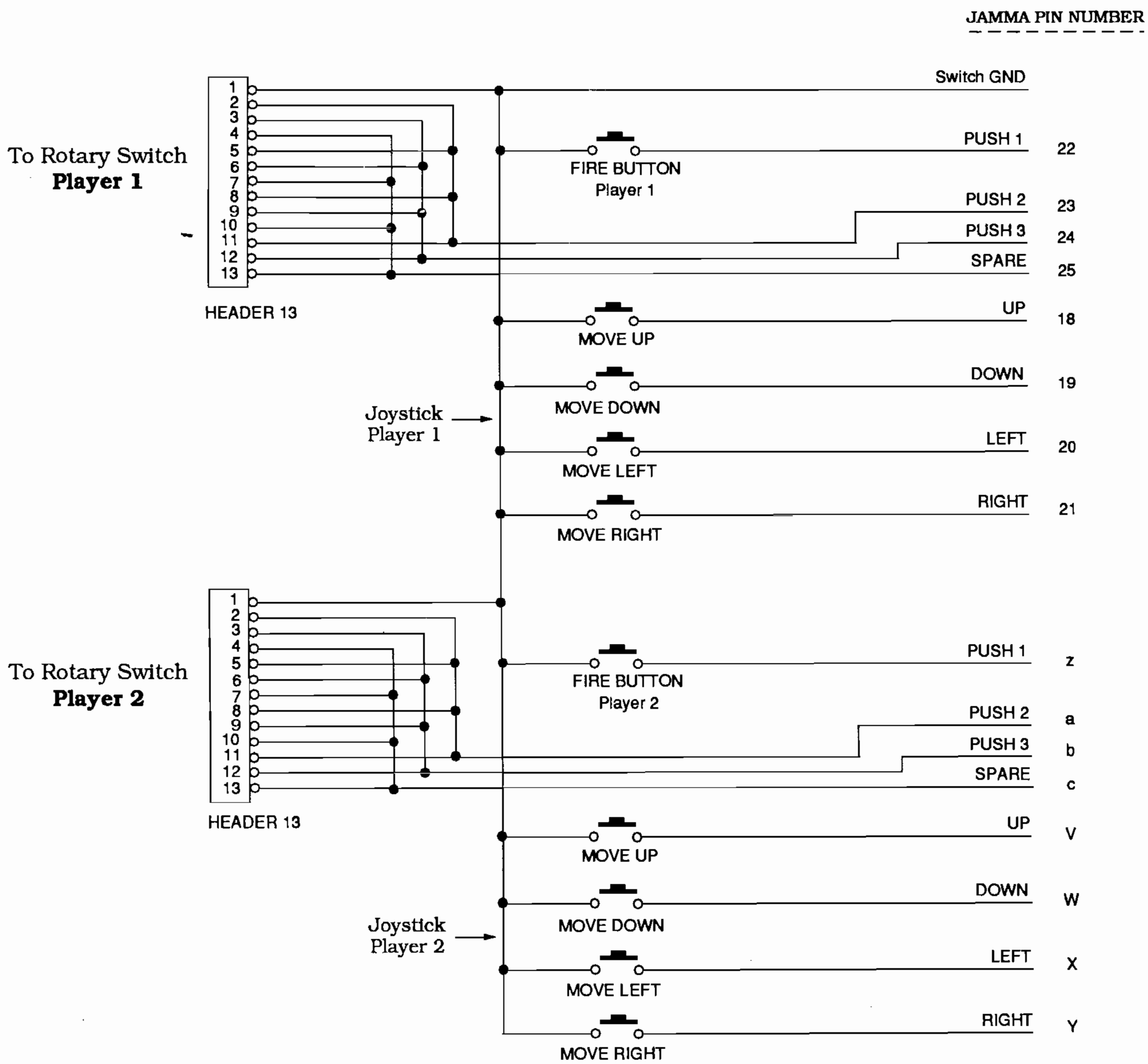
Function	Wire Color	Pin	Pin	Wire Color	Function
GROUND	BLK	1	A	BLK	GROUND
GROUND	BLK	2	B	BLK	GROUND
+5 VOLTS DC	GRY	3	C	GRY	+5 VOLTS DC
+5 VOLTS DC	GRY	4	D	GRY	+5 VOLTS DC
- 5 VOLTS DC	GRY-GRN	5	E	GRY-GRN	- 5 VOLTS DC
+12 VOLTS DC	GRY-YEL	6	F	GRY-YEL	+12 VOLTS DC
	KEY	7	H	KEY	
COUNTER 1*	WHT-ORG	8	J	WHT-GRN	**COUNTER 2***
	NC	9	K	NC	
SPEAKER (+)	RED-VIO	10	L	GRN-VIO	SPEAKER (-)
	NC	11	M	NC	
VIDEO RED	RED	12	N	GRN	VIDEO GRN
VIDEO BLU	BRN	13	P	WHT	VIDEO SYNC
VIDEO GND	SHIELD	14	R	WHT-RED	**SERVICE***
TEST*	GRN	15	S	WHT-VIO	**TILT***
COIN 1	WHT-BLU	16	T	YEL-WHT	COIN 2
START 1	YEL-GRN	17	U	YEL-BLU	2 START
1 UP MOVE	ORG-BLK	18	V	YEL-BLK	2 UP MOVE
1 DOWN MOVE	ORG-BRN	19	W	YEL-BRN	2 DOWN MOVE
1 LEFT MOVE	ORG-RED	20	X	YEL-RED	2 LEFT MOVE
1 RIGHT MOVE	ORG	21	Y	YEL-ORG	2 RIGHT MOVE
1 UP FIRE	ORG-YEL	22	Z	YEL-VIO	2 UP FIRE
1 DOWN FIRE	ORG-GRN	23	a	YEL-GRY	2 DOWN FIRE
1 LEFT FIRE	ORG-BLU	24	b	VIO-BLK	2 LEFT FIRE
1 RIGHT FIRE	ORG-VIO	25	c	VIO-BRN	2 RIGHT FIRE
NC	NC	26	d	NC	NC
	NC	27	e	BLK-BRN	GROUND
GROUND	BLK	28	f	BLK	GROUND

*** Optional functions, Game will funtion without these.**

SMASH TV KIT CABINET WIRING

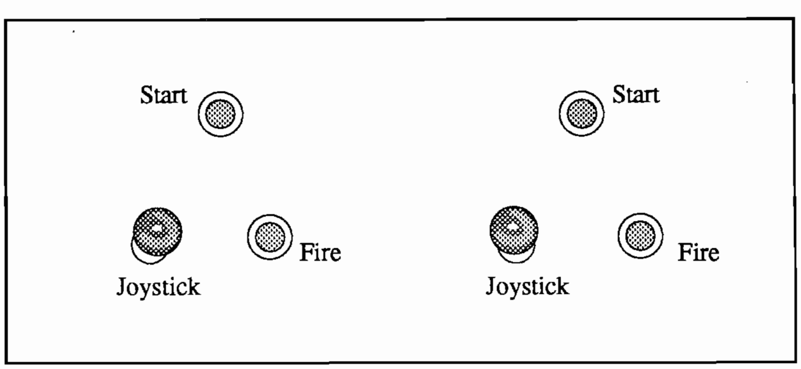


Optional
Rotary Joystick Wiring Diagram



* **Note:** To make software work,
Dip Switch Bank #2, Switch #2 must be in the CLOSED position.

Please find below, a suggested example of a Rotary joystick control panel layout.



NOTES

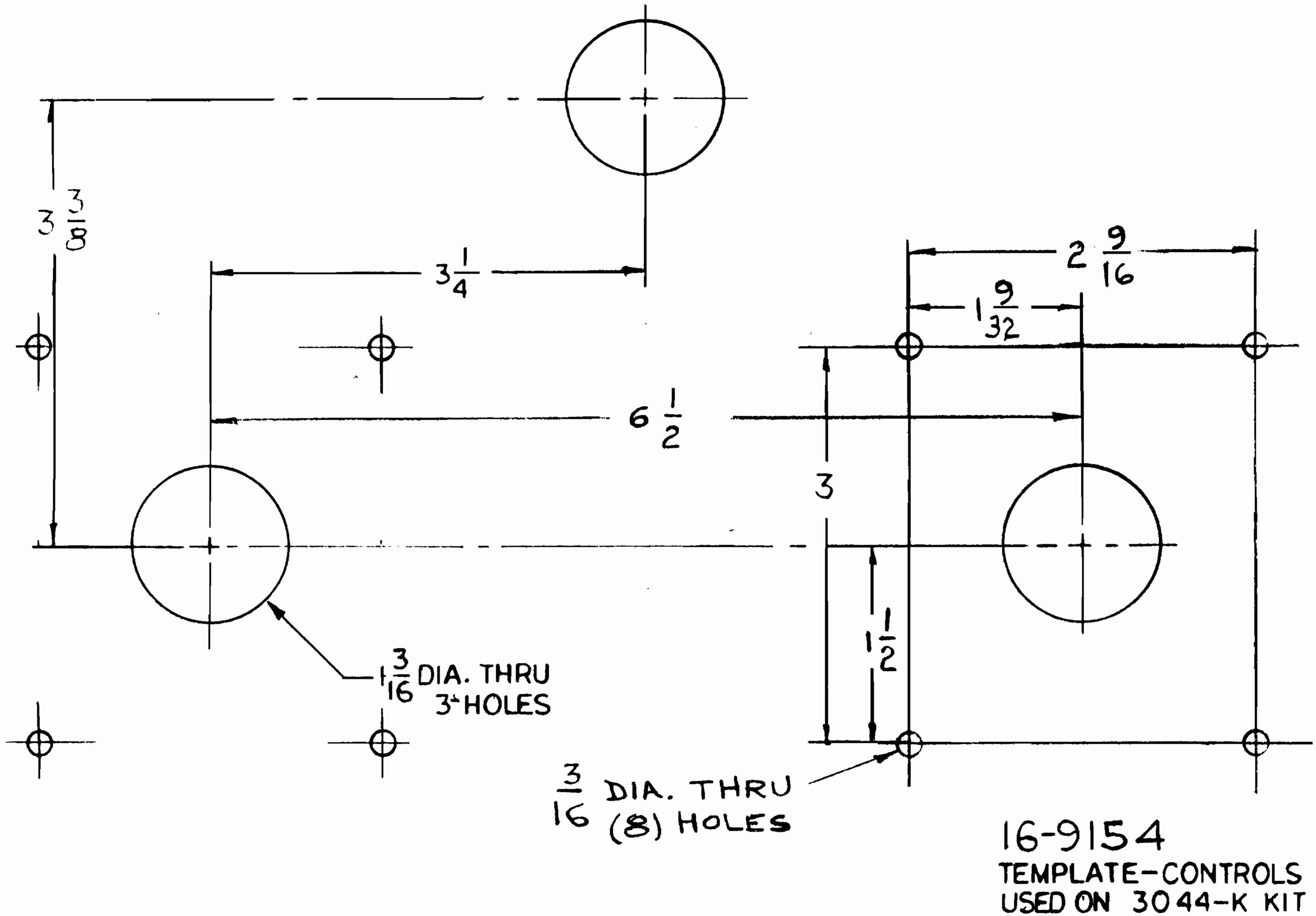
Smash TV Inserted Jumpers

AUDIO BOARD
P/N D-11581-3044

W2
W9
W11

CPU BOARD
P/N C-13234-3044-K

W2	W29	W47	W66
W8	W31	W48	W68
W11	W32	W50	W69
W12	W34	W52	W71
W14	W36	W55	W73
W21	W39	W57	W75
W22	W41	W58	W77
W24	W42	W60	W80
W27	W45	W62	


3 3/8
3 1/4
2 9/16
1 9/32
6 1/2
3
1 1/2
1 3/16 DIA. THRU
3- HOLES
3/16 DIA. THRU
(8) HOLES
16-9154
TEMPLATE-CONTROLS
USED ON 3044-K KIT

WARNINGS & NOTICES

Warning

USE OF NON-WILLIAMS' PARTS OR CIRCUIT MODIFICATIONS MAY CAUSE SERIOUS INJURY OR EQUIPMENT DAMAGE! USE ONLY WILLIAMS' AUTHORIZED PARTS.

* For safety and reliability, substitute parts and modifications are not recommended.
* Substitute parts or modifications may void FCC type acceptance.
* This game is protected by Federal copyright, trademark and patent laws.

Unauthorized modifications may be illegal under Federal law. This also applies to Williams' logos, designs, publications and assemblies. Moreover, facsimiles of Williams' equipment (or any feature thereof) may be illegal under federal law, regardless of whether or not such facsimiles are manufactured with Williams' components.

Warning

This equipment generates, uses and can emit radio frequency energy and, if not installed properly and used according to the directions in this manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of part 15 of FCC rules which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference to radio communications, in which the user, at his or her own expense, will be required to take whatever measures may be needed to correct the interference.

Warning

Prevent shock hazard and assure proper game operation. Only plug this game into a properly grounded outlet. Do not use a cheater plug to defeat the power cord's grounding pin. Do not cut off the ground pin.

Notice

When Williams ships a game, it is in compliance with FCC regulations. Your sticker is proof. If the sticker is missing or damaged, legal repercussions to the owner or distributor of the game may result. If your game kit does not contain an FCC sticker, call Williams Electronics immediately.

Notice

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